BRITISH RAILWAYS
AND
THE GREAT WAR

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Organisation, Efforts, Difficulties and Achievements

BY

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etc.

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PREFACE.

When, shortly after the outbreak of war and the successful dispatch of the Expeditionary Force to France, it became evident that railways were to play a part of primary importance in the development of the conflict—that the war, in fact, was to be a "Railway War"—the Author had the idea of following up his earlier works on transport questions by eventually giving to the world the story of what the British railways had accomplished as the result of activities obviously destined to tax their energies and their resources to the utmost extent and to exercise a considerable influence on the movements and achievements of the British Forces, if not on the actual course of the war itself.

At this time, however, it was much too early to start on such an undertaking, and although the Railway Executive Committee, to whom the idea was mooted, were not averse thereto, when the proper time should arrive for carrying it into effect, it was evident that, under the prevailing conditions, any would-be historian seeking to learn all that was then going on might find that he was only asking for trouble. It thus occurred to the Author that, as a safer, though still useful, introduction to his proposed task, he might prepare a work which would trace the part that railways in general had played in warfare from the earliest days of their employment in this direction down to the outbreak of the latest war of all, in August, 1914. Hence the publication, in December, 1915, of his work on "The Rise of Rail-Power in War and Conquest, 1833–1914," a book of 400 pp., demy octavo, now out of print.

On the announcement being made in the House of Commons in July, 1916, that the Government had arranged for the writing of an official history of the war, the Author revived the question as to a history of the part that British Railways were taking in the war, and facilities were then afforded to him for the making of the necessary researches and for the collection of the essential information, a certain amount of which, however, as regarded the earlier preparations of the British railways for war, in accordance with the dictates of ordinary State policy, had already been given by him in "The Rise of Rail-Power."

A considerable proportion of the material thus eventually collected, and now included in the present work, was gathered from official minutes, reports, correspondence, memoranda, etc., to which the Author was given access; but still more, perhaps, was obtained as the result of interviews with railway or State officials and others in various parts of the country who were able from personal knowledge to give details which had not

previously been placed on record at all; yet even here one found that there was a great deal which, though falling within the region of romance, had been done by railwaymen as a matter of duty under conditions of great stress and strain, had failed to strike them as having any romance whatever, and had already been either forgotten by them or not sufficiently remembered to be capable of complete recall. Happily, it was still possible to rescue from oblivion much that would otherwise have been lost.

It should be said, too, that, although affording to the Author every opportunity to obtain the data, the details and the general information thus brought together, neither the Railway Executive Committee nor the individual companies sought in any way to influence his choice of subjects, his selection of material, or his methods of treatment, perfect freedom of action and of discretion being allowed to him in all these respects. On the other hand, they readily afforded him assistance in the revision of proofs with a view both to ensuring accuracy in matters of fact and to offering suggestions where, as occurred from time to time, questions of railway policy called for special consideration. Steps were taken by the Author in other directions, also, to secure a revision of Chapters or sections in which questions of State policy were concerned, various excisions being made as might be found expedient.

While gratefully acknowledging the confidence shown in him by the railway managers and the invaluable help given to him alike by them, by the companies, by individual railwaymen, by State officials either still in active service or demobilised, and by various local authorities, the Author takes upon himself the full responsibility for any faults of commission or omission in a work which is to be regarded in the light, not of an "official publication," but of a one-man effort designed solely as an historical record, with no aim either to serve the purposes of propaganda or to enter upon a discussion of post-war problems.

In the contents of these two volumes the average reader will find much that is entirely new to him.

He will remember with what perfect smoothness the initial dispatch of British Troops overseas was conducted, the impression then given being that the railways were just about the only one of our national organisations which was thoroughly prepared for war. If, however, this was the case, it was because, as a matter of foresight and policy in regard to questions of national defence, the companies had been more or less actively engaged on the preparation and revision of mobilisation time-tables and other details concerning the working of emergency troop traffic since the year 1866, when the first of their series of the said time-tables was compiled for the War Office, following on the creation, in 1865, of the Engineer and Railway Volunteer Staff Corps—now the Engineer and Railway Staff Corps (T.F.)—originally projected in 1860 as an addition to the Volunteer Movement following on the anticipations of a French invasion in 1859. In 1896 came the formation of the War Railway Council with its railway representatives who, among other

obligations undertaken, carried the preparation of mobilisation time-tables much further than had been done before, while in 1905 the War Office was discussing with the railway companies the formation of a special railway reserve for service overseas and the terms on which they would ensure the use of engines and rolling-stock for any "little wars" in which we might be concerned.

The reader will learn, however, that the real period of preparation for a war with a Continental Power was due to the political troubles of 1913, and that the creation of the Railway Executive Committee in November, 1912, followed by that of a Communications Board in January, 1915, together with the decision of the Government in, or not long before, August, 1914, to take possession of the railways under the Act of 1871 instead of under an Act of 1888 expressly designed by the Government of the day to supersede it, were developments in State policy all based on recommendations made in 1911 by the railway managers themselves.

Taking these things into account, together with the evidence afforded as to the activities of the Railway Executive Committee between the date of their appointment and the outbreak of war, there will be less reason for surprise at the state of readiness on the part of the railways for the dispatch of an army overseas at a few hours', or, at least, at a few days' notice when the occasion for so doing arose.

Much that is unknown to the average person—if not, indeed, also to the average railwayman—concerning the controlled lines and their cross-country or their across and around London connections is given, showing how readily the 130 separately-owned railways taken over by the Government for the purposes of the war could be at once operated as a unified system. Then the Chapter on the methods of working of the Railway Executive Committee should be read with special interest by those who may marvel how it was that a small body of twelve General Managers and a staff of comparatively insignificant proportions carried out the task of controlling practically the entire group of railways in Great Britain and making provision for the almost overwhelming transport and other requirements devolving upon those railways under war-time conditions. Details concerning the financial arrangements between the Government and the railways will also be found.

The arrangements under which mobilisation and the actual dispatch of the Expeditionary Force were effected, together with the nature of the organisation on which subsequent movements of troops—including their eventual demobilisation—were based, are detailed, and some striking facts and figures are offered as to the extent of the free or reduced-fare travel carried by the railways either directly or indirectly on Government account. The various restrictions imposed from time to time on the movement by rail of the civilian population are narrated, and these are followed by the story as to the provision of ambulance trains in which the sick and wounded arriving from overseas were distributed among hospitals and convalescent homes all over Great Britain. The Chapter dealing with the considerable movement of Belgian refugees

recalls some of the most stirring incidents of the early days of the war. It is followed by one concerning the further movement of Belgian soldiers on leave.

What is said on the subject of free transport and free services affords additional evidence as to the extent of the work done by the railways without their receiving any direct return from the Government in respect thereto.

"Railways and Coasting Services" brings out, among other things, the little-known fact that there are close on 4,000 ports or places around the British Isles at which either overseas or coasting traffic is, or was, under pre-war conditions, dealt with. The early competition between the railways and the coasting services, the experiences suffered by the latter when the traffic left them for the State-subsidised railways, and the efforts made to relieve them from a threatened ruin which was likely to become a national disaster bring together a collection of important facts which should especially appeal to students of transport and economic questions.

Every trader will remember that in the early days of the war, and even before the close of the year 1914, complaints were already being made as to an alleged shortage of railway wagons—a shortage which seemed to increase in gravity during the following year, although there had then been no such wholesale dispatch of wagons for service overseas as was to follow later on.

In the opinion, however, of the railway companies the trouble experienced was due, not to an actual shortage, but to a very grave misusage of wagons, more especially on the part of Government departments and of contractors working for them. Eventually, and in spite of a variety of measures taken at an early stage by the Railway Executive Committee, the evil attained, from a railway point of view, intolerable proportions, and towards the end of 1915 there was formed, on the instigation of the Railway Executive Committee, a Joint Committee of representatives of railway companies and various State departments which was the means of eliciting some most remarkable evidence as to the nature of the abuses then proceeding, and was eventually able to bring about such remedies as were within the scope of attainment. The whole story told in this connection is the more deserving of perusal because it further suggests that, if the Railway Executive Committee had not succeeded in effecting a certain degree of control over their own controllers, the conditions of rail transport would soon have been reduced to a state of chaos.

Useful work in regard to the organisation of traffic was done by the Transport Branch of the Ministry of Munitions, and a good purpose was served by the formation of an Inter-departmental Committee—consisting of representatives alike of State departments and of the members of the Railway Executive Committee—which dealt with a wide range of subjects of mutual concern, while the employment of members of the Transport Workers' Battalion was most effective in relieving the transport

situation in various parts of the country. Separate Chapters deal with all these different developments.

Much research and inquiry were involved in writing the story which is given concerning the enlistment of railwaymen; but the Author was of opinion that the time might come when inquirers would want to know precisely what happened in this connection, and the story itself was so involved and complicated that he thought it better to collect the details and provide the complete record whilst this was still possible, the more so as it appeared inconceivable that anyone would be able to work up all the material facts at any much later date.

It should, however, be added in this connection that the railway companies did more than contribute over 184,000 members of their staffs to the constitution of his Majesty's Forces, as related in the text of the present work. They further "loaned" to the Government about two thousand members of their staffs of various grades, either to take charge of Government departments—as was the case in a number of instances—or to work therein, among those so "loaned" being individuals of high standing, or of the greatest degree of skill in the railway service, whom it would have been to the special advantage of the companies to retain in their positions, having regard to all the difficulties of the situation they had to face. Other railwaymen holding responsible positions were either engaged for Government work straight away, and left the railway service at once, or else were so engaged, and adopted this course, after being for some time "on loan"—a condition under which, down to the end of July, 1918 (different arrangements being then made), men on loan continued to receive their salaries—plus extra allowances—from their companies, who included such payments in their working expenses, to be made good under the Government guarantee.

The most conspicuous example of what was done in the direction stated was, of course, afforded by the case of Sir Eric Geddes. Appointed Deputy General Manager of the North Eastern Railway in 1911, he was, on the creation of the Ministry of Munitions, loaned thereto by his company, in May, 1915, as Deputy Director-General of Munitions Supply, and he received the honour of knighthood in June, 1916. The leading events in his subsequent remarkable career—in the course of which the "loan" period was concluded by his retirement from the North Eastern—may be summarised as follows: Services temporarily placed by the Ministry of Munitions at the disposal of the Army Council in August, 1916, for the purpose of an investigation into the transport arrangements for the movement of British troops in this country and overseas, such investigation to comprise road, rail, canal, docks, etc.; appointed October 6th, 1916, Director-General, in the War Office, of Military Railways, to act as Deputy to the Quartermaster-General in matters affecting transport services, and to direct and organise such services under the General Officer Commanding-in-Chief; became, October 22nd, 1916, Inspector-General of Transportation to the British Army in France (with temporary rank of Honorary Major-General), which post he was

to hold in addition to that of Director-General of Military Railways in the War Office; appointed, March 28th, 1917, Inspector-General of Transportation in all theatres of war, retaining his position on Sir Douglas Haig's staff as Inspector-General of Transportation, but vacating his post at the War Office as Director-General of Military Railways; changed from the Army to the Navy, May 14th, 1917, when he became a member of the Board of Admiralty with the title of Controller and the honorary and temporary rank of Vice-Admiral; made K.C.B. in the following June; appointed First Lord of the Admiralty, July 18th, 1917; became, the next day, a member of the Privy Council; returned as M.P. for Cambridge, July 25th, 1917; made G.B.E. August 25th, 1917, and Grand Officier of the Légion d'Honneur December 20th, 1917; appointed, December 20th, 1918, as representing the War Cabinet, to co-ordinate the activities of various Government departments in regard to demobilisation; received the G.C.B. in the New Year honours of 1919, and was appointed first Minister of Transport in August, 1919, under the terms of the Ministry of Transport Act, 1919.

Coming next to General Managers who were members of the Railway Executive Committee, we find that in March, 1916, the services of Sir Guy Granet, General Manager of the Midland Railway Company, were placed by the Directors of that company at the disposal of the Board of Trade, in order that he might act as Controller of a Department of Import Restrictions which had been created to serve a temporary purpose in giving effect to the policy of the Government in the matter of imports. In October, 1916, when Sir Eric Geddes, then Director-General of Military Railways in the War Office, was, as we have seen, also appointed Inspector-General of Transportation in France, Sir Guy became Deputy Director-General of Military Railways; and when Sir Eric Geddes retired from his post in the War Office to devote himself to his new position as Inspector-General of Transportation in all the theatres of war, Sir Guy succeeded him in that department with the title of Director-General of Movements and Railways, being, concurrently therewith, appointed a civilian member of the Army Council. Sir Guy resigned his post, as well as his membership of the Army Council, in March, 1918, when, at the request of the Government, he undertook a mission to the United States in connection with food and transportation problems. At the end of 1919 he vacated his position as General Manager of the Midland and was succeeded by Mr. Frank Tatlow, who had already acted for him on the Railway Executive Committee during the time he had been engaged on the other duties undertaken by him in connection with the war.

As part of the organisation of the Department of Military Railways at the War Office, Sir Sam Fay, General Manager of the Great Central Railway, was, in January, 1917, appointed to the control of military and munition train movements in this country with a view to securing complete co-ordination of military rail-transport work at home and overseas. On Sir Guy Granet assuming the position of Director-General of

Movements and Railways, Sir Sam Fay became Director of Movements, subsequently succeeding Sir Guy Granet as Director-General of Movements and Railways, his responsibility being now extended to movements in connection alike with railways and roads, inland waterways and docks in all the theatres of war. Sir Sam Fay also took over the seat on the Army Council vacated by Sir Guy Granet.

A pathetic interest attaches to the fact that Mr., afterwards Sir Guy, Calthrop, General Manager of the London and North Western Railway Company, accepted, in March, 1917, at the request of the Government, the position of Controller of Coal Mines, there being no reason to doubt that his untimely death in February, 1919, was primarily due to the strenuous and harassing nature of the duties in which he was involved.

In March, 1917, another member of the Railway Executive Committee, Mr., now Major-General Sir Henry Worth Thornton, General Manager of the Great Eastern Railway, was appointed Deputy Director of Inland Waterways and Docks. Later in the same year he became Assistant Director-General of Movements and Railways, with the temporary rank of Colonel, and in April, 1918, he was made Deputy Director-General, with the temporary rank of Brigadier-General. Early in 1919 he went to France as Inspector-General of Transportation, with the rank of Major-General. In the same year he was created a Knight-Commander of the Order of the British Empire, received the cross of an Officier de l'ordre de Léopold (Belgian), and was awarded the American Distinguished Service Medal. In February, 1920, the cross of Commander of the Legion of Honour was conferred upon him by the President of the French Republic.

When a new President of the Board of Trade was wanted in 1916 it was upon a railwayman, Sir Albert H. Stanley, Managing Director of the Underground Electric Railway Company of London, and now Lord Ashfield, that the choice of the Government fell, though in his case he was not a member of the Railway Executive Committee, nor was he "loaned" by his company to the Government.

As further examples of railwaymen who took up Government work, whether under "loan" conditions or otherwise, though mainly the former, the following instances might be mentioned :—

Mr. (afterwards Sir James) Ball, Chief Engineer of the London, Brighton and South Coast Railway, appointed, in 1917, Controller of Timber Supplies. He died in September, 1920.

Mr. (afterwards Lieut.-Colonel Sir J. C.) Beharrell, formerly Assistant Goods Manager and Commercial Agent of the North Eastern Railway Company, was loaned to be Chief Statistical Officer at the Ministry of Munitions in connection with gun ammunition filling ; afterwards went to France as Assistant Director-General of Transportation ; joined the Admiralty with Sir Eric Geddes in 1917 as Director of Statistics in the Controller's Department ; undertook special work in connection with demobilisation in December, 1918, and afterwards became Director-General of Finance and Statistics at the Ministry of Transport.

Mr. H. G. Burgess, Irish Traffic Manager, London and North Western Railway, became Director of Cross-Channel Transportation and afterwards Director-General of Transportation in Ireland. He is now Principal Assistant to the General Manager.

Mr. W. Clow, Superintendent of the Line, Great Central Railway, joined, in January, 1917, the staff of Sir Eric Geddes, then Director-General of Military Railways, with the rank of Major in the Royal Engineers, and afterwards became Officer-in-Charge of Military Camp Railways in England, with the rank of Lieut.-Colonel.

Mr. F. C. A. Coventry, Assistant to Superintendent of the Line, Great Western Railway, loaned in November, 1915, as Deputy Director, Munitions Inland Transport Department, and returned to the Great Western March, 1919.

Mr. (now Sir Francis) Dunnell, Secretary and Solicitor of the North Eastern Railway Company, was, on the appointment of Sir Eric Geddes as First Lord of the Admiralty, lent by his company as a temporary and additional Assistant Secretary of the Admiralty. He afterwards took up the dual position of Secretary and Solicitor to the Ministry of Transport.

Mr. (now Sir Henry) Fowler, Chief Mechanical Engineer, Midland Railway, after being attached for some time to the Ministry of Munitions as Deputy-Controller of Production, was, in September, 1916, appointed Superintendent of Royal Aircraft Factories, subsequently returning to his post on the Midland.

Mr. George J. Gibson, Traffic Manager of the Manchester, Sheffield and Nottinghamshire section of the Great Central Railway, was, in January, 1918, appointed Director of Railway Transport, Ministry of Food. He died in October, 1919.

Mr. S. H. Hunt, formerly Assistant to General Manager, now Chief Goods Manager, London and North Western, joined the Coal Mines Control Department (Board of Trade) in March, 1917, and remained there until the end of 1918.

Mr. W. A. Jepson, Assistant to General Manager, London and North Western, was loaned to the Ministry of Transport in August, 1920, as a member of the Rates Advisory Committee, and, at the time of writing, is still " on loan " to the Ministry.

Mr. E. A. Prosser, General Manager, Cardiff Railway and Docks, Rhymney Railway and Taff Vale Railway, took up, in January, 1917, the post of Deputy Director of Military Train Movements at the War Office, under Sir Sam Fay.

Mr. (now Sir) Vincent L. Raven, Chief Mechanical Engineer, North Eastern Railway, was loaned to the Government early in the war. He served, in the first instance, in the Ministry of Munitions, but in September, 1915, was given the high and extremely responsible position of Chief Superintendent of Ordnance Factories at Woolwich Arsenal. In May, 1917, he was appointed Controller of Armament Production at the Admiralty, with cordite, torpedo and gun factories, and, also, airship production, under his charge. This post he occupied until January, 1919, when he returned to the North Eastern.

Mr. R. H. Selbie, General Manager of the Metropolitan Railway, became, in May, 1917, chairman of a committee formed at the instigation of the War Office to undertake the purchase and control of oats required from overseas for the feeding of horses, and to take over the duties and responsibilities of the Allies' Forage Committee.

Mr. John Strachan, District Traffic Superintendent to the North British Railway Company at Burntisland, was, on the formation of the Coal Mines Department, and at the request of Sir Guy Calthrop, loaned by the company to act as the Coal Controllers' representative in Scotland. He took up the position in April, 1917, and served with distinction until the necessity for the appointment ceased in November, 1919, when he returned to his company.

Mr. R. L. Wedgwood, now Deputy General Manager of the North Eastern Railway, joined the Ministry of Munitions in July, 1915, and in October, 1916, was appointed Director of Docks under the Director-General of Transportation in France with the rank of temporary Brigadier-General. He received the honours of C.B. and C.M.G., and he also became an Officer of the Legion of Honour and a Commander of the Belgian Order of the Crown.

Mr. (now Commander) H. F. Whitworth, a member of the staff of the Great Northern Railway Company, joined the Admiralty service in January, 1916, to organise an Admiralty Rail Transport Department still carried on under his direc-

tion. During the war period he had five assistants who had left the service of various railway companies to take temporary commissions in the Royal Naval Volunteer Reserve and were specially appointed by the Admiralty to the Rail Transport Department.

Mr. H. L. Wilkinson, Assistant Divisional Superintendent, Great Western Railway, took over the duties of Traffic Manager in connection with the extensive munitions depôt constructed for the Government at Henbury, near Avonmouth. He occupied this position from March, 1917, until the following August, when he returned to the company to assume the duties of Divisional Superintendent (London).

Mr. Howard Williams, appointed in April, 1920, General Manager of the Central Argentine Railway, joined the Ministry of Munitions Transport Branch in 1915, when Mineral Traffic Manager of the London and North Western Railway, the company granting the loan of his services for the purpose, and he shortly afterwards became Director of what developed into an extensive organisation, by which an immense amount of responsible work was done. Returning to Euston at the end of 1917, he was appointed assistant to the General Manager, but joined the Coal Mines Control Department of the Board of Trade for the last three months of 1918.

Apart from the positions thus occupied by individuals mainly "loaned" by their companies, there were certain Government departments which were largely staffed by railwaymen specially borrowed or employed for the purpose. This was the case with, for example, the Coal Mines Control Department. Of the 196 persons constituting the staff of the Ministry of Munitions Transport Branch, no fewer than 112 had been lent by various railway companies. The Transport Branch of the Ministry of Food, of which, as mentioned above, Mr. George J. Gibson was placed in charge, had a staff composed almost entirely of "loaned" and retired railwaymen. At Southampton the London and South Western Railway Company supplied to different State departments concerned in the transport or other work carried on there twenty telephone operators, sixty clerks and ninety cyclist messengers.

As for the Government departments in general which procured staff on loan from the railway companies, they comprised, in addition to those already mentioned, the War Office, the Admiralty, the Home Office, the Colonial Office, the Board of Agriculture and Fisheries, the Ministry of Munitions (as distinct from the Transport Branch thereof), the Ministry of Shipping, the Ministry of Food, the Wool Transport Office (Bradford), the Trench Warfare Department, Army Canteens, the Petrol Committee, etc., whilst a large number of men from railway workshops were, at the request of the Government, supplied to Woolwich Arsenal, the Small Arms Factories at Enfield and Birmingham, the Gretna Factory and many other munition works throughout the country.

We have in all this still another phase of the services rendered to the Government by the railway companies in the prosecution of the war which, probably, very few persons have yet realised. It seemed, indeed, as though, whenever a new department was formed, whenever an existing department stood in need of strengthening, or whenever the necessity arose for some one to occupy an especially responsible position (apart from active duties on the Field of Battle), it was to the railway companies that the Government looked first for assistance—and this fact would be made

clearer still if one added to what has already been said concerning the railway staffs similar details as to the duties undertaken, also, by railway directors.

Passing on now to other branches of our subject, there will be found in the pages which follow a detailed account of the use which the Government were able to make of railway steamships, together with a complete list of those that were lost during the course of the war. A series of Chapters is devoted to naval rail transport in war-time, much information being given thereon which would not be obtainable in any other direction. One of the longest Chapters in the work—that which deals with "Railways and Air-Raids,"—describes the organisation carried out by the railway companies to assist in circumventing the enemy air-raids on Great Britain. It shows, among other things, how they were able to follow almost every twist and turn of the raiders and communicate practically instantaneous news thereof to the authorities in London. Maps and diagrams illustrating these movements are given, while the exhaustive details concerning the actual damage done to railway property prove how insignificant such damage was from the point of view of military considerations.

The Chapter on "War Manufactures in Railway Workshops" shows that the activity of the railways in this direction began with almost the very outset of the war and was continued on such a scale that the total value of the work done in many different directions—including, for example, the provision of ambulance trains—eventually attained a total of close on £18,000,000, all this work being done by the companies at practically cost price. The letter from Lord Kitchener, given on page 591, is of special interest as testifying to the support he was ready to give the railway companies in their willingness to make the greatest possible use of their facilities for the production of munitions of war.

The operations overseas of the various bodies of Railway Troops specially raised in this country with the active and direct assistance of the railway companies are described, and the facts given concerning the response made by the companies from time to time to those demands for engines, rolling stock and railway material for use overseas which at last became urgent appeals to them to "save the situation" in France should still further suggest to the reader how great, indeed, were the services they rendered, not alone at home but overseas, in the conduct of the war. While, in fact, on the outbreak of hostilities, the companies achieved a task of great military importance by landing the original Expeditionary Force so promptly and so successfully in France, they may also be considered to have done much towards bringing about the final defeat of the enemy—apart from all they did in the intermediate period—by the way in which, when the greatest crisis of all arose, they rushed men and material to the Western Front and strengthened, not only the Fighting Forces, but, what was still more important at the moment, the available transport facilities, regardless of everything except the winning of the war.

The help thus rendered by the companies throughout in the supply of men and material led to serious depletion both of staff and of transport facilities, and this necessarily involved goods-traffic restrictions which are here also recorded, while the Chapters on the pooling of wagons should be appreciated by those who may wish to glean, with the least possible effort and loss of time, the history and developments of a complicated and much misunderstood question of which, in all probability, more will be heard in connection with the future working of the railway system.

Other remedial measures adopted with a view to overcoming the difficulties in the transport situation are described under the headings, "Allocation of Goods Traffic," "Allocation of Parcels Traffic," "Nominated Loading," "Coal Transport Re-organisation Scheme," "Locomotive Repairs and Renewals: Materials from U.S.A.," "Appeals to Traders," "Goods under Mark," "Parcel Stamps," "Prepayment of Parcels and Miscellaneous Traffic," "Increase in Parcels Rates," "Limitation in Weight of Parcels and Packages" and "Proposed Prepayment of Charges on Goods Traffic."

The Chapter on State control of the canals explains the nature of the difficulties experienced by inland waterways when, with depleted staffs and increased expenses, they had, like the coasting services, to face the competition of railways still carrying traffic at pre-war rates, and an account is given of the various measures taken to assist them in the position in which they were placed. The work done in connection with timber control, in which the railways were concerned from a transport point of view, is described, and a brief account is given as to the way in which the railway companies carried out an organisation designed to ensure, as far as possible, the provision of sleepers, controlled materials and other construction or maintenance essentials.

For the Chapter on "War-time Labour Conditions"—the only Chapter in the two volumes not written by himself—the Author is indebted to one of the ablest experts on railway staff questions, and he would suggest that, having regard to the clearness and the completeness with which the essential facts of what became a highly complex situation are stated, it should be found an ideal example of those "historical documents" which it was the special desire of the Author here to bring together.

A short sketch of what was done in the provision at leading railway stations of free buffets for soldiers and sailors is followed by Chapters dealing with the measures taken in various directions for the purposes of home defence; and here, again, much is told that will be new to the majority of readers, although the facts relating to the protection of coastal towns and districts would be more or less known to the localities concerned.

Having, in the first instance, made as close a study as was possible of the operation of the railways as a single unit under State-control conditions, the Author came to the conclusion that no record written entirely from this point of view would be adequate, and that it would be impossible

for the British public to obtain a really comprehensive view of all that was accomplished unless he gave an account, also, of the experiences of certain individual companies, great or small, as typical of the difficulties and the conditions under which the lines in general were operated. Sixteen companies are thus dealt with. Digests of a number of the Chapters relating to this branch of the subject, as well as of several others, have already been contributed by the Author to the columns of *The Railway Gazette.*

The last Chapter, bringing the story down to the end of the railway-control period on August 15th, 1921, covers, among other matters, the formation of the Ministry of Transport, the dissolution of the Railway Executive Committee, the work of the Rates Advisory Committee, the "White Paper," the Colwyn Committee on Railway Agreements and the passing of the Railways Act, 1921.

Bearing in mind the main purposes aimed at in the work thus offered to the world, and preferring that the facts recorded should speak for themselves, the Author has refrained from attempting to enter upon any eulogy of his own concerning the achievements of the Railway Executive Committee, the railway companies and the railway staffs of all grades under the conditions detailed. He has thought it more fitting, in this connection, to content himself with giving, in the form of an Appendix, a collection of "Public Tributes to Railway Efficiency during the State-control Period" which bring out far better—and much more appropriately—than any words of his own could do, the success attained by all concerned in the working of the railways for the purposes of the war and the great degree of indebtedness due to them on the part of the country for the results they attained.

EDWIN A. PRATT.

September, 1921.

NOTE.

On page 198 Mr. C. Aldington is spoken of as "now General Manager" of the Great Western Railway. This was correct at the time the statement was made in No. III of the Parts in which the work was originally published, though it was no longer correct at the date when the Preface was written, Mr. Aldington having retired from the position, on account of ill health, and been succeeded by Mr. Felix J. C. Pole, the Assistant General Manager of the company, in June, 1921.

"Evens hundred," on page 554, nine lines from the bottom, should read "seven hundred."

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BRITISH RAILWAYS AND THE GREAT WAR.

CHAPTER I.

INTRODUCTORY.

WHILST (as already fully narrated in "The Rise of Rail-Power in War and Conquest") the *construction* of railways, in time of peace, to serve the purposes of war, offensive or defensive, was first advocated in Germany and France in or about the year 1833 and became the recognised policy of the former country only a few years later, the need for *organisation*, directed to the making of provision alike for the building, repair, destruction and working of railways and for the regulation of military traffic in general under war-time conditions, was not fully realised on the Continent of Europe until after the American Civil War of 1861–5.

It was the lesson taught by the value of the services rendered by the Construction Corps then set up by the Federals which directly inspired the action of Prussia, in 1866, in establishing that Field Railway Section (*Feldeisenbahnabteilung*) which was eventually to develop into a comprehensive scheme of preparation for war by organising every possible phase of military rail-transport and leaving nothing to chance that could be foreseen and provided for in advance. Acting along these lines with her characteristic thoroughness, and profiting by some unsatisfactory experiences at the outset, Prussia gradually perfected a system for the efficient utilisation of railways in war which became no less complete in itself than the actual network of her strategical railways.

Apart from any considerations as to the nature of the motives that led Prussia to adopt a policy in which she was followed by other German States and other countries, it must be admitted, as a general principle, that, without an organisation more or less perfected in peace time, railways may not only be deprived of most of their usefulness in time of war, but may even become a source of danger to the army or to the country depending on them. Time-tables must be drawn up in advance for the running of every troop train that will be required for the initial purposes of mobilisation and concentration so that not a minute may be lost on the declaration of war, when, indeed, even minutes may be of vital importance. For each separate unit the mobilisation time-tables must show, among other things, what station it will go from to a given destination; at what time the train will start on the particular day of mobilisa-

tion assigned to it, and, what is of no less importance, the time it will, or should, arrive.

This last-mentioned consideration affects more especially what is known in railway language as the "balancing" of trains. That is to say, if a large body of troops is being dispatched in a succession of trains, either from a single starting point or many, to one and the same destination, there must be such an interval between the arrival of one train and that of another that the first will be able to discharge its load, clear the lines and be ready to proceed elsewhere before the second train arrives to take its place. Unless the time-tables were prepared on this basis—and more especially so in the case of troops going to a certain port for embarkation—the result would be a speedy blocking of the railway lines and a condition of more or less general chaos.

Organisation should also provide in advance the machinery by which the national lines, together with any railways captured in the enemy's country, will be controlled and operated. It should especially provide recognised authorities who would alone have the right to give orders or directions to the railway staffs, acting in this way as intermediaries between military officers unfamiliar with the technicalities of railway operation and railway men not familiar, perhaps, with military needs or conditions, and having no authority to decide between possibly conflicting commands. Other intermediaries are wanted at leading railway stations to supervise the entraining or detraining of troops and horses, the loading or unloading of stores, etc.; and so on with naval and military traffic in general.

Measures require to be taken to avoid the undue detention of rolling stock in order that the most efficient use thereof can be assured.

Construction Corps must be available for the prompt repair of lines which the enemy will destroy if he has the chance; for the rebuilding of railway bridges; for impeding the advance by rail of an invader, or for laying fresh lines where these may be necessary.

Railway Troops, together with railway men forming a Railway Reserve, should be in readiness to take over the working of railways behind the advancing army.

All these, and many other preparations, precautions and arrangements must be brought within the scope of an efficient peace-time organisation if railways, whether avowedly strategical or commercial, are to fulfil all the purposes of which they are capable in the event of war—when rightly used. Without this organisation, the delicate piece of machinery that railways constitute will inevitably break down under the strain of abnormal demands and impossible orders from those who do not understand its working or its limitations, and the ultimate fate, under these conditions, of the country or of the army depending on the railway may be worse than if there were no railway at all and if the troops and their impedimenta had all to go by road, as in the days prior to those revolutionary changes in war which the locomotive introduced.

So, in the story to be told in the earlier chapters of the present work,

as to the way in which, prior to the outbreak of the World War of 1914–18, England had organised for the efficient utilisation of railways in warfare, we have to bear in mind three material considerations: (1) That Germany herself set the precedent, on the Continent of Europe, which other nations there were to follow; (2) that the policy adopted in this country, under different conditions, was initiated and carried out in regard to its fundamental principles and leading details long before the said World War was even dreamed of; and (3) that although the British railways were, by reason of their peace-time preparations, fully equal to all immediate transport demands made upon them on the outbreak of hostilities in August, 1914, their own state of readiness at that period—contrasting so strongly with the unreadiness of the country in general—was essentially due to the earlier taking of purely precautionary measures as a matter of prudence and foresight, and in no way whatever to any aggressive national policy.

CHAPTER II.

EARLY MEASURES IN ENGLAND.

THE first attempt to create in this country an organisation designed to ensure the efficient working of our railways in time of war was inspired neither by American precedent nor by German example. It was due, rather, to considerations based exclusively on questions of national defence; though the expediency of extending peace-time preparations to overseas warfare, having regard more especially to our Imperial interests, was also to claim attention not long afterwards.[1]

In 1847 the Duke of Wellington (then Commander-in-Chief) addressed to Sir John Burgoyne a letter in which he said he had endeavoured to awaken the attention of different Administrations to the defenceless state of the country. We had, he declared, no defence, or hope of chance of defence, except in our Fleet, and he was especially sensible both of the certainty of failure if we did not, at an early moment, attend to the measures necessary to be taken for our defence, and of "the disgrace, the indelible disgrace," of such failure. Then, in words that greatly impressed the country, he added :—

> I am bordering upon seventy-seven years of age, passed in honour ; I hope that the Almighty may protect me from being the witness of the tragedy which I cannot persuade my contemporaries to take measures to avert.

As the result alike of this pathetic warning; of a "Letter on the Defence of England by Volunteer Corps and Militia," issued in pamphlet form by Sir Charles Napier in 1852, and of the Indian Mutiny in 1857—which event called attention to the defenceless condition of the Empire as a whole—continuous efforts were made to secure the creation of Volunteer Corps for the purposes of defence. They still met with persistent discouragement, the Government refusing official recognition to certain corps of riflemen which had been tentatively formed; but in 1859 the attitude of the military party in France towards this country aroused public feeling here to such an extent that on May 12th in that year the then Secretary of State for War, General Peel, addressed a circular to the Lord-Lieutenants of counties in Great Britain announcing that Volunteer Rifle Corps might be formed under an Act passed in 1804, when a like course had been adopted as a precautionary measure against the threatened invasion of England by Napoleon.

[1] With a view to ensuring the historical completeness of the account here given concerning "Early Measures in England," certain of the facts which follow have been reproduced from Chapter IV. of the present writer's work on "The Rise of Rail-Power in War and Conquest," now out of print.

The formation of Volunteer Corps was thereupon taken up with the greatest zeal, and by the end of 1860 the number of Volunteers enrolled throughout Great Britain was no fewer than 120,000. Other results of the national awakening in 1859 were the public discussion of the questions of coast defence and armoured trains and the appropriation, in 1860, of a loan of seven and a half millions for the improvement of our coast defences, and notably the fortifications of Portsmouth and Plymouth.

Engineer and Railway Staff Corps.

Already in December, 1859, attention was being called to the necessity for some definite engineering instruction for Volunteers, and in January, 1860, the first corps of Engineer Volunteers was created, under the title of the 1st Middlesex (South Kensington) Engineer Volunteers, which in October of the same year had over 500 members. Similar corps were formed in various parts of the country, and by 1867 the number of Engineer Volunteers enrolled was 6,580.

At the beginning of 1860 a further proposal was made for the formation of a body which, composed of eminent civil engineers, the General Managers of leading lines of railway and the principal railway contractors or other employers of labour, would undertake a variety of duties considered no less essential in the interests of national defence.

There was, in the first place, the question of the transport by rail alike of Volunteers and of the regular forces, either on the occasion of reviews or for the protection of our coasts against an invader. While it was evident that the railways could be efficiently worked only by their own officers, it was no less obvious that plans for the movement of large bodies of men, and especially of troops with horses, guns, ammunition and stores, should be well considered and prepared for long beforehand, and not left for the occasion or the emergency when the need for them would arise.

In the next place it was suggested that the engineering talent of the country should be made available for the purpose of supplementing the services of the Royal Engineers in carrying out various defensive works, such as the destruction of railway lines, bridges and roads, the throwing up of earthworks or the flooding of the lowland districts with a view to resisting the advance of a possible invader.

Finally the great contractors were to be brought into the combination so that they could provide the labour necessary for the execution of these defensive works under the direction of the civil engineers, who themselves would act under the direction of the military commanders.

Each of the three groups was to discharge the function for which it was specially adapted and the co-ordination of the three, for the purpose of strengthening the country's powers of resisting invasion, was expected to add greatly to the value of the proposed organisation.

The author of this scheme was Mr. Charles Manby, F.R.S. (1804–1884), a distinguished civil engineer who for nearly half a century was

secretary of the Institution of Civil Engineers and was closely associated with the leading civil engineers, contractors and railway interests of the country. He submitted his ideas to several members of the Council of his Institute, and though, at first, the scheme was not well received, he was subsequently so far encouraged that in August, 1860, he laid his plan before Mr. Sidney Herbert, then Minister for War in Lord Palmerston's second administration. Mr. Herbert expressed cordial approval of the project, giving the assurance, on behalf of the War Office, that an organisation on the basis suggested could not fail to be of public benefit; but Mr. Manby still met with difficulties alike from several members of the Council, who either offered direct opposition to the scheme or else gave unwilling consent to join, and, also, from the railway companies, who then thought that arrangements for rail-transport might very well be left to themselves and that there was no necessity for the suggested system so far as they, at least, were concerned.

In these circumstances, Mr. Manby made, at first, very little progress; but he was unremitting in his efforts to demonstrate alike to civil engineers and to the railway companies the practical benefits from the point of view of public interests that would result from the organisation he advocated, and in 1864 he felt sufficiently encouraged to lay his views once more before the War Office. Earl de Grey, then in charge of that Department, thereupon instructed the Inspector-General of Volunteers, Colonel McMurdo (afterwards General Sir W. M. McMurdo, C.B.), to inquire into and report to him on the subject.

In the result there was created, in January, 1865, a body known as the Engineer and Railway Volunteer Staff Corps, constituted, according to its rules, "for the purpose of directing the application of skilled labour and of railway transport to the purposes of national defence, and for preparing, in time of peace, a system on which such duties should be conducted." On the occasion of a presentation of prizes to members of the Queen's Westminster (22nd Middlesex) Rifle Volunteers, as reported in *The Times* of January 10th, 1865, Colonel McMurdo said :—

> In order that the Volunteers and the Army of England should be able to move in large masses from one part of the country to another, they would have to depend upon railways. In all the wars of late years—as in the Italian war, the war in Denmark and in the American war—the railway had been brought into service to move armies rapidly from place to place, and this new corps, which at present consisted of the most eminent engineers and General Managers of the great lines, had the task of bringing into a unity of action the whole system of railways of Great Britain; so that if war should visit England, which God forbid, this country would be placed on an equality with other countries whose Governments possessed the advantage—if advantage it might be called—of carrying on the business of the railways. And the importance of this they might estimate when he assured them that, with the finest army in the world, unless they had a system by which 200,000 men could move upon the railways with order, security and precision, efficiency and numbers would be of no avail upon the day of battle; and that unless we had order, unless we had certainty in the moving of large masses, the day of battle, which might come, would be to us a day of disaster.

The Corps was to consist of officers only, and its members were to be civil engineers and contractors, officers of railway and dock companies, and, under special circumstances, Board of Trade Inspectors of Railways. Civil engineers of standing and experience who had directed the construction of the chief railways and other important works, General Managers of railways and commercial docks, and Board of Trade Inspectors of Railways were alone eligible for the rank of Lieutenant-Colonel. Other civil engineers and contractors connected chiefly with railway works, and, also, railway officers other than General Managers, were to take the rank of Major. Col. McMurdo was appointed Honorary Colonel of the Corps on February 9th, 1865. Under the Territorial and Reserve Forces Act of 1907 the Corps became part of the Territorial Force, and the designation "Volunteer" was dropped from its title, which, since that date, has been "Engineer and Railway Staff Corps (T.F.)." As ultimately constituted, the Corps comprised an Hon. Colonel (Major-General D. A. Scott, C.V.O., C.B., D.S.O.), a Lieutenant-Colonel Commandant, twenty-nine other Lieutenant-Colonels and twenty-eight Majors. Sir William Forbes, General Manager of the London, Brighton, and South Coast Railway, who joined the Corps in 1899, was Commandant from March, 1914, to April, 1920, when he was succeeded by Mr. C. H. Dent, General Manager of the Great Northern Railway.

Functions and Purposes.

That the Corps thus created was the direct outcome, first, of the Volunteer movement, and, through that movement, of the state of semi-panic into which the country had drifted in 1859 as the result both of the anticipations of invasion and the admitted weakness, at that time, of our national defences, has thus been clearly established. Writing in 1869, Major-General McMurdo, who had been raised to that rank in 1868, said in a pamphlet he issued under the title of "Rifle Volunteers for Field Service" that the Corps was "prepared to work, not for Volunteers alone, but for the entire defensive forces of the country." He also gave an account of the functions and purposes the Corps had been designed to serve. Alluding first to the Volunteer movement, he showed how the railway carriage must both carry and shelter the Volunteer when moving from one part of the country to another; and he proceeded :—

> I will ask you to look attentively for a moment at a Bradshaw's railway map, and you will see that throughout the network of rails that overspreads the land none of the meshes, so to speak, in any vital parts of the country, exceed fifteen miles across, from rail to rail; but as the eye approaches the Metropolis, or any of the commercial centres, these meshes are diminished to about one-half the area of the others.

He dealt with the operations which the movement of troops along these lines of railway would involve, and continued :—

> The railway schemes for the accomplishment of such delicate operations would emanate from the Council of the Engineer and Railway Staff Corps. . . .
>
> During peace the railway branch of this body is employed in working out

hypothetical plans of campaign, in the development of which they manipulate in theory the entire rolling stock and railway resources of the country, elaborated by special time-tables and technical reports.

The share taken by the civil engineers is not confined to providing merely for the class of railway works contingent on war, whether for construction, demolition or of reconstruction, but in supplying the military engineers with information, advice and labour. No one, for example, can be more familiar with the features and character of a district than the engineer who has constructed a line of railway through it. No one is so well able to point out the results of *letting in* that which he has been so often employed in *keeping out*, viz., the inundations of the sea. None better acquainted with the existing distribution of labour power throughout the country, and of the means by which it could be concentrated upon given points, for the construction of works of defence. All these elements, in short, by which the gigantic resources of our country may be safely wielded for her defence, are now being silently considered and woven into strategical schemes of operations by these eminent and patriotic men, the value of whose voluntary services will not be fully comprehended or appreciated till the day comes when the discomfiture of the invader shall be accomplished through their instrumentality.

The same distinguished authority wrote concerning the Engineer and Railway Volunteer Staff Corps in an article on "Volunteers" which he contributed to the "Encyclopædia Britannica" (ninth edition) :—

The ready labour power of this useful Corps is estimated at from 12,000 to 20,000 navvies, with tools, barrows, and commissariat complete. It has already performed important service in tabulating, and printing at great private cost, complete time-tables and special reports for six general concentrations against possible invasion. A special return was also prepared by the Corps (the first of its kind) of the entire rolling stock of all the railways in Great Britain. This important work—which is corrected and republished annually—shows where the requisite number of carriages of every description can be obtained for the composition of troop trains.

In the official catalogue of books in the War Office Library there is an item which reads :—"Time-Tables for Special Troop Trains, etc. Compiled by the Railway Companies. 311 pp. 8vo. London, 1866." This, presumably, refers to the first of the complete time-tables mentioned in the "Encyclopædia Britannica" article as having been compiled by the Corps. It is evident, from the date given, that the Corps must have got quickly to work after its formation in 1865.

At one time there was an expectation that the Engineer and Railway Volunteer Staff Corps would develop into a body exercising still wider and more responsible duties than those already mentioned. On this point we have the testimony of the late Sir George Findlay, formerly General Manager of the London and North Western Railway Company, and himself a Lieutenant-Colonel in the Corps.

The scheme then projected, as told by Sir George in his book on "The Working and Management of an English Railway," first published in 1889, was that, in the event of war, the principal railway officers would, for the time being, become servants of the State, and the railways would be operated and controlled, under the direction of the Headquarters Staff, by the officers of the Engineer and Railway Volunteer Staff Corps.

The Headquarters Staff would, in other words, state what transport they required and the Corps would be responsible for providing it. In order to facilitate this arrangement, the railways of the country would be divided into groups, or sections, each under the management of an officer of the Corps acting in conjunction with the Council of that body. In its general effect, Sir George added, the scheme had met with the approval of the Council of the Engineer and Railway Volunteer Staff Corps, "who," he continued, "have been invited by the War Office to consider the whole question." In a second edition of his book, issued later in the same year (1889), he added a "Note" to his previous references to the Engineer and Railway Volunteer Staff Corps, saying :—

> The officers of the Staff Corps, under the direction of the War Office, are at present engaged in drawing up a carefully considered code of rules and regulations for the working of the railways of Great Britain in connection with railways abroad, in the event of this country engaging in a foreign war.

Sir George Findlay returned to the subject in a contribution to the *United Services Magazine* for April, 1892, replying to Colonel J. S. Rothwell, R.A., Professor of Military Administration, Staff College, who, in two articles on "The Conveyance of Troops by Railway," published in the issues of the same magazine for December, 1891, and January, 1892, had complained of the inadequate attention which, he alleged, had been shown in this country to the subject of military rail transport in time of war. Referring to the Engineer and Railway Volunteer Staff Corps, Colonel Rothwell said :—

> Though the efficiency of these gentlemen in their own sphere is undeniable, it appears open to question whether they are likely to have sufficient leisure personally to work out the details of a large concentration of troops by rail, and whether the special requirements of military transport will be fully appreciated by them or by the subordinates whom they presumably will employ.

Much required to be done before the country could be considered ready to meet a possible invader. He concluded :—

> If the invasion of England is to be regarded as an event which is within the bounds of possibility, it is surely not unreasonable to ask that those precautionary measures which require time for their elaboration shall be thoroughly worked out before there is any risk of our wanting to employ them. The organisation for the conveyance of our troops by railway is such a measure.

To these criticisms Sir George Findlay replied by declaring that the complete network of railways covering this country, admirably equipped and efficiently worked as they were, would be found equal to any part they might be called upon to play in a scheme of national defence. As regarded the attention already paid to the subject he said :—

> The War Office, so far from having in any way neglected the subject, have devoted considerable attention to it, and a complete scheme for the working of our railways for transport purposes in time of war has been elaborated, and would at once be put in operation, if ever the emergency arose.

Passing on to describe the composition and duties of the Engineer and Railway Volunteer Staff Corps, he spoke of its members as meeting in council at their headquarters to discuss from time to time details of railway organisation and other matters delegated to their consideration, afterwards reporting their conclusions to the War Office; and he went on to say that for the operation of the railways under State control, on any occasion of national emergency or danger—

A draft scheme has been prepared, has been worked out in detail, and would, in all probability, be adopted and put in operation if, unhappily, the necessity should ever arise.

This scheme in its main features provides that, at such time as we are contemplating, the principal railway officials in Great Britain and Ireland would at once become, for the time being, the officers of the State, and in addition to the general managers of the leading railways, who are officers of the Engineer and Railway Volunteer Staff Corps, military rank of some kind would be conferred upon the engineers, locomotive superintendents, chief passenger superintendents and goods managers of the principal railway companies, as well as on the managers of the principal Irish railways.

The railways of the country would be divided into sections, and for each section there would be a committee composed of the general managers of the railways included in the section, together with the principal engineers, locomotive superintendents and other chief officers. The railways would be worked and controlled for military purposes by these committees of sections, each committee having as its president a Lieutenant-Colonel of the Engineer and Railway Staff Corps, who would be directly responsible for providing transport for troops and stores over the section of which his committee had charge, while if the operation to be carried out required the co-operation of one or more sections of the railways, the committees of these sections would act in unison. In such a case the Quartermaster-General's requisition for the service to be performed would be made upon the president of the section embracing the point of departure, that officer and his committee taking the initiative and arranging with the other committees for the performance of the service.

For each section or group of railways, a military officer of rank would be appointed, with full power to arrange for food, forage and water for the troops and horses *en route*, and having at his disposal a sufficient number of soldiers and labourers to assist in loading and unloading baggage, stores, etc., at the points of entrainment and detrainment within his section. He would also be able to command the services of the Royal or Volunteer Engineers to assist in the erection of temporary platforms or landings, or the laying down of temporary rails, and would be instructed to co-operate with, and assist in every way, the committee of section having charge of his district, and not in any way to attempt to interfere with the working of the line or the movement of the trains or traffic.

The number of sections into which the railways were to be divided for the purposes of the scheme was nine. After defining the various areas, Sir George continued :—

It is contemplated that during any such period of crisis as we are now discussing the Council of the Engineer and Railway Volunteer Staff Corps would be sitting *en permanence* at its headquarters, and, with a full knowledge of the nature and extent of the operations to be carried out, would have power to regulate the supply and distribution of rolling stock throughout the area affected, all the vehicles in the country being, for the time being, treated as a common stock.

This is a mere outline of the scheme, with the further details of which it is not

necessary to trouble the reader, though probably enough has been said to show that the subject, far from having been neglected, as Colonel Rothwell appears to assume, has been carefully studied and thought out.

Had the scheme in question been matured and adopted on the lines here stated, a still greater degree of importance would have been attached to the position and proceedings of a Corps then—and still—almost unknown to the world at large, since its chief function was to carry out investigations at the request of the authorities and prepare reports, statements and statistics which have invariably got no farther than the War Office and the Horse Guards, where, alone, the value of the services rendered has been fully understood and appreciated. The scheme was, however, allowed to drop. The powers and duties of the Corps were to be reduced by the creation of other bodies, and the eventual control of the railways by the State, under war conditions, was directed along lines differing materially from the scheme projected in the '80's.

The Corps had, nevertheless, done excellent pioneer work. It established the principle that railways, no less than those other branches of National Defence with which the railways must needs be associated, should be organised in time of peace for the requirements of war ; it laid down broadly, and subject to later improvements, the bases on which such organisation should proceed ; it helped to evolve defensive schemes, and it did a great deal of useful work, in the preparation of mobilisation time-tables and in other directions, which not only must have been of advantage to the military authorities of that day but, in addition, laid the foundations for much that was to follow.

CHAPTER III.

THE WAR RAILWAY COUNCIL.

ALTHOUGH the usefulness of the functions discharged by the Engineer and Railway Volunteer Staff Corps was beyond dispute, the view was nevertheless entertained by the War Office that there should be a supplementary body which, smaller in size, and co-ordinating more thoroughly the railway, the military and the naval elements, would take over some of the duties already being discharged by the Corps, and others, besides.

In accordance, therefore, with instructions issued by the Secretary of State for War, there was created, in 1896, an Army Railway Council which was eventually constituted as follows:—The Deputy Quartermaster-General (President); the Deputy-Assistant Quartermaster-General; six railway managers, of whom four represented the English, one the Scottish and one the Irish railway companies; two members of the Engineer and Railway Volunteer Staff Corps other than railway managers; one Board of Trade Inspector of Railways; one mobilisation officer; two naval officers; and one officer of the Royal Engineers, with a representative of the Quartermaster-General's Department as secretary.

The duties of the Council in time of peace were to be: (1) Generally to advise the Secretary of State for War on matters relating to military rail-transport; (2) to draw up, in communication with the different railways concerned, and on the basis of data to be supplied to them by the War Office, a detailed scheme for the movement of troops on mobilisation; (3) to settle definitely the composition of trains required for the corps, regiments, batteries, etc., to be moved, these details being based on information to be obtained as to number of officers, N.C.O.'s and men in the different units, number of horses, guns, vehicles and stores, classes of vehicles required and the availability thereof; (4) to determine the best shape in which the information thus required by the railway companies could be supplied to them, and to prepare the necessary regulations and instructions in regard to the carrying out of the scheme; (5) to elaborate rules for the organisation of a body of Railway Staff Officers who, located at stations to be selected as far as possible by the Council, would act as intermediaries between the railway authorities and the troops; and (6) to confer with the different railway companies as to the need for and the provision of extra sidings, loading platforms, loading ramps, barriers, etc., at any of the stations where they might be required. Information on these subjects was to be carefully compiled or elaborated, and, with explanatory maps, placed on record for use when necessary.

In the event of mobilisation, or on the occasion of a national emergency, the Council was, generally, to advise the Secretary of State for War as to any question relating to the movement of troops by railway ; to act as a medium of communication between the War Office and the railway companies, and to make all needful arrangements in connection with the rail-transport of troops.

The designation of the Council was changed in 1903 from " Army Railway Council," to that of " War Railway Council," this alteration being made to meet the views of the Admiralty.

Only four meetings of the full Council were held, namely, in May, 1897, October, 1903, July, 1909, and December, 1910 ; but the amount of work done was far greater than would be suggested by the bare statement here made. The Council itself dealt with most of the subjects comprised within its wide terms of reference, establishing principles, laying foundations for effective organisation, and arranging for peace-time preparations which, developed by later activities in other directions, were eventually to be of great practical advantage when conditions of grave national emergency did at last arise. Most, however, of the detail work in connection with the proceedings of the Council was carried through by an Executive Committee, appointed in October, 1903, and consisting of certain Staff Officers and two Admiralty members, with the General Managers on the Council as *ex-officio* members ; by sub-committees appointed by the President (in accordance with powers conferred upon him) to investigate and report on any special question that arose for consideration, and, still more, by the railway managers on the Council, who deliberated among themselves on a variety of traffic questions submitted to them from time to time and arranged with the railway companies for the compilation, on behalf of the War Department, of mobilisation time-tables and for the supply, also, of much statistical or other information involving, in the aggregate, a vast amount of labour.

Mobilisation Time-Tables.

Taken over from the Engineer and Railway Volunteer Staff Corps, the preparation of mobilisation time-tables—of a type akin to those which had long been compiled, in time of peace, in leading countries on the Continent of Europe—became one of the most important duties of the War Railway Council.

As previously carried out by the said Corps, the work in question had been done in a somewhat crude fashion on account of the reluctance shown at that time by the naval and military authorities to entrust civilians, even of the standing and responsibility of railway managers, with the secrets of their mobilisation plans. The companies were, in effect, expected to arrange in advance for mobilisation moves on the basis of wholly inadequate information as to what had to be provided for ; and the results were necessarily imperfect and unsatisfactory.

Like conditions prevailed in the earlier days even of the War Railway Council.

A sub-committee appointed at the first meeting of the Council in May, 1897, had already dealt with a number of questions in regard to military transport. These included the composition of trains for various bodies of troops, a memorandum on the formation of such trains being presented by the General Managers of the Great Western and Great Eastern Railways. Lists of movements for concentrations of garrisons had also been handed over by the four railway managers member of the Council in 1897 (the increase in their number to six took place in 1903) in order that time-tables should be prepared from them. In 1901 the General Manager of the Great Western Railway presented to the Council time-tables drawn up in connection with the lines of that company; but at this time it was thought inadvisable to carry the matter further owing to, among other reasons, the many alterations which had been made in the disposition of troops on account of the War in South Africa.

With the appointment, in 1903, of an Executive Committee of the War Railway Council, the work was taken up afresh on a more definite basis. This Executive Committee was to have for its special function the systematic drawing up and periodical revision of mobilisation time-tables, and the fact that it comprised the naval, military and railway elements led to a greater degree of co-ordination; though the naval and military interests were still safeguarded by the understanding that, although the railway managers on the Council were, as already told, to be *ex-officio* members of the Executive, and might depute representatives to attend in their place, only those of them who, or whose companies, were directly concerned in the questions to be considered would be invited to attend the meetings. It will, also, have been seen from the terms of reference that one of the duties of the Council was to decide just how much and what kind of information should be given to the railway companies to assist them in making the transport arrangements for a detailed scheme of mobilisation.

Under these improved conditions there was the possibility of better work being done; and at a meeting of the Executive Committee on February 2nd, 1904, it was arranged that separate programmes, giving the number of troops, guns, horses, vehicles, etc., to be moved on mobilisation for home defence, with dates (i.e., day of mobilisation period) and places of departure and arrival, should be sent to the General Managers of all railway companies represented on the Council, in order that responsible members of the staffs of those companies could meet, divide the work between all the companies concerned, prepare the time-tables, and submit them, on completion, to the Executive Committee, who would, in turn, report upon them to the War Railway Council. In effect, this meant that each company taking part in a through movement had to fill in on the time-tables the times relating to its own line and the arrival at the junction at which another company would take the train forward, meetings of the time-table experts being held to ensure co-ordination and accuracy. When the time-tables of the different companies were ready, they were forwarded to the London and North Western, or, in some instances, to

the London and South Western, to be collated and completed and then sent on to the War Office.

Time-tables prepared on this basis were submitted by the railway companies in November, 1904. They were revised in July, 1905, when the companies recommended that the revision should in future be an annual one—preferably in November. To this the War Office agreed. It was further arranged that, as the mobilisation programme had hitherto shown services applicable to weekdays only, one of the days of mobilisation should be regarded as a Sunday or a public holiday, the tables being amended accordingly.

There were further revisions in 1906 and 1907, but it was not until 1909, when amended forms of mobilisation programmes were agreed to between the War Office and the companies, that the latter were able to prepare what they themselves regarded as "mobilisation time-tables proper." In effect, the mobilisation programmes now sent to railway companies by the military authorities were to show, in regard to each and every unit to be moved, what it would consist of, from what station it would start, the day of mobilisation on which it would travel (1st day, 2nd day, 3rd day, etc.), and the time at which it should arrive. On the basis of the actual requirements, as thus broadly stated, it became the business of the company or companies concerned to arrange for all the working details in regard to provision of rolling stock, times of passing stations and junctions *en route*, etc., making up a complete time-table, and taking all the necessary steps to ensure that the trains would be available, and would run to time, whenever the need for them arose.

In 1911 the periodical revisions entered on a new phase. For military purposes, the United Kingdom had been divided into a series of "Commands" which, in January of that year, comprised (1) Eastern, including the London district; (2) Southern; (3) Western; (4) Northern; (5) Scottish; and (6) Irish. As the result of this new system, instructions to the railways for special troop movements within each Command were to be given exclusively through the General Officer Commanding-in-Chief, who was to take full responsibility for the carrying out of all moves in his own Command. So, in addition to the preparation of the time-tables, from this period, on a much more detailed basis than before, it was necessary that a separate programme should, in the first instance, be planned and revised annually for each separate Command, under the supervision of the General Officer Commanding-in-Chief of that Command acting in direct consultation with a representative or representatives of the railway companies operating within the Command and concerned in the moves in question. A "throughout" time-table also had to be prepared in order that it could be seen at a glance whether there was a clashing at any points in the times laid down for the running of the special trains.

All this additional work was undertaken by the railway companies (acting through their representatives on the War Railway Council) in the early part of 1911. It was further arranged that in each Command there should be a "Secretary Railway Company" which would act on

behalf of all the railway companies operating within the Command. The Secretary Railway Company received in bulk the military requirements from its Command and was responsible for making the throughout arrangements to destination for all trains originating therein and communicating such details as were necessary to each railway company and other Commands affected.

The co-ordination brought about under this arrangement considerably facilitated the exchange of communications between the military and railway authorities. It further resulted in the production of the first really tangible and serviceable mobilisation scheme.

The Secretary Companies were appointed as follows :—

Command.	Secretary Railway Company.
Eastern	South Eastern and Chatham
Southern	London and South Western
Western	London and North Western
Northern	North Eastern
Scottish	North British
Irish	Great Northern of Ireland

In addition to the work done in these directions, the railway companies had to provide complete time-tables for a scheme for the mobilisation of the Royal Naval Reserve, while, what with various supplementary programmes and continuous alterations in "Command," "Expeditionary" and other moves, the whole task eventually assumed such proportions that it was found impossible to dispose of the programme for one year before another was sent in for revision. In these circumstances an arrangement was made under which the forwarding to the railway companies of fresh schedules in regard to "Horses," "Reservists" and "Other Moves" respectively was to take place on different dates throughout the year, allowing for a good interval between each.

Under the Command system, in fact, the mobilisation programme, which had hitherto been a relatively small matter, assumed very large proportions, the tables to be prepared and the mass of details to be dealt with involving an amount of labour greatly in excess of what had previously been necessary. So far, too, as the companies were concerned, all this work was done free of charge, although the War Office did make a small gratuity to certain members of the railway staffs who had spent excessively long hours on the preparation of the tables, the secret nature of which, as regards the details arranged, made it necessary that the task should be entrusted to the smallest possible number of persons. In one instance, at least, the early death of an especially talented time-table expert was directly attributed to the strenuous and exhausting toil which the work in question had involved.

Railways and Overseas Warfare.

Concurrently with the drawing up and annual revision of mobilisation time-tables in respect to the transport of troops at home, the attention of the railway managers on the War Railway Council had been directed

by the military authorities to various proposals designed to the making of better provision for the use of railways in overseas warfare, as distinct from any question concerning their employment for the purposes of National Defence. These particular developments were due, in part, to the period of re-organisation in general through which the British Army was passing in 1905, and, in part (so far as regards the particular subjects in which we are here concerned), to the lessons taught by the expedition to China in 1900, the South African War of 1899–1902, and the knowledge of the fact that in their organisation of Railway Troops and military railways certain other countries were greatly in advance of the United Kingdom.

In their rising against European influence, the Boxers had effected the greatest possible destruction of railway communications in China as a means of delaying the movements of the armed forces sent there by the various Powers taking part in the international effort to secure, in the first instance, the relief of the besieged legations in Peking. The destruction was practically complete on 120 of the 256 miles of line between Shan-hai-kuan and Peking, and this was especially the case on the section between Tientsin and Peking. Inasmuch as the line had been built with English capital and still had some Englishmen on the staff, the greater portion of it passed, by agreement among the Powers, under British control, and Lieut.-Col. Macdonald, who was placed in charge of the British railway operations in October, 1900, organised a railway staff from a combination of Royal Engineers, British civilians and Chinese. He was handicapped, however, by the fact that the "Railway Section" which had accompanied the British Expeditionary Force sent from India consisted only of one subaltern and forty men. Owing to the weakness of this Railway Section, the control of the line between Tang-Ku and Tientsin, which had, at first, been undertaken by the British, was claimed, and secured, by the Russian Railway Battalion. The German troops had also brought a Railway Battalion which, in turn, was accompanied by all the necessary equipment, in the way of rails, rolling stock, etc., for the laying of light railways.

In these circumstances the British appeared to be at a disadvantage in respect to railway preparations and facilities, as compared with other of the Powers; but Col. Macdonald got together a railway staff which eventually consisted of twenty-eight military officers, fourteen civil officers, ninety-five British N.C.O.'s and men, seventeen civil subordinates, 600 Chinese staff and 3,000 coolies. With these helpers, he accomplished a remarkable amount of work, including the reconstruction of fourteen miles of old line, with 1,500 ft. of bridging; the strengthening and improving of 100 miles of damaged line and 9,000 ft. of bridging; the construction of thirty miles of new line, with 1,000 ft. of bridging; the restoration of sheds, shops, stations, etc.; the erection of eleven new engines, the repair of forty-six others, and the building or repair of much rolling stock.

Our experiences on this occasion had, nevertheless, been such that, when the expedition was brought to an end, Lieut.-Col. C. A. R. Browne,

who had taken an active part in it, submitted to the Indian Government a report on "The Organisation of an Indian Railway Corps," while in a dispatch from the Government of India, dated May 21st, 1903, it was stated that they were creating a Railway Reserve from amongst the civil railway staff; were providing for the technical instruction of Sapper Contingents by the purchase of rails, sleepers, etc., and were, also, spending eight lacs of rupees on materials for military railways.

The special need of India for a Military Railway Corps was explained by Captain L. E. Hopkins in an article published in the *Royal Engineers Journal* for August, 1905, on "Army Railway Organisation," wherein he said:—

> The main purpose for which the Indian Army exists is the defence of the North-West Frontier. In the event of war it may be necessary to advance the defensive frontier some 400 miles, more or less, beyond the present political frontier, and it is, therefore, essential to provide for the very rapid construction of railways in support of that advance.

There was thus all the more reason why India should be warned by what had happened in China, and take action accordingly.

In the South African War, the extensive use made of railways had been attended by two special conditions: (1) The creation of a Department of Military Railways, with Colonel, afterwards Major-General, Sir E. Percy C. Girouard, R.E., as "Director of Railways for South African Field Force," and a Military Railway Controlling Staff, designed to be intermediaries between the Army and the technical railway staff and to ensure military efficiency in the railway working; and (2) the creation of a staff for the repair of railways damaged by the enemy and for the operation of those taken from him in proportion as the British forces advanced.

On this latter point Sir Percy wrote in his "History of the Railways during the War in South Africa":—

> The South African campaign has fully shown the necessity of having a number of traffic employés registered in peace time, who are paid a small retaining fee which will render them liable to be called out in case of war at home or abroad. The want of this system forced the Director of Railways in South Africa to employ a large number of men who had been employed by the enemy, and who could not be relied on, and also to withdraw from the fighting-line a large number of soldiers with railway experience prior to enlistment; and he was compelled to work the railways with this heterogeneous mass of individuals whose qualifications were unknown. . . . The registration system would, also, arrange for the men on the railways being subject to military law, the necessity for which has been clearly proved.

These experiences in China and South Africa only confirmed and enforced what this country had previously been taught—by the Abyssinian campaign, by our expeditions in Egypt and the Sudan, and by other "little wars" in which we had been engaged—as to the need of making such peace-time preparations that we should always have forces of Railway Troops and railway material available for use in case of need instead of delaying these preparations until the emergency arose.

As regards the strength of Railway Troops in other countries, the Brigade of three Regiments in Germany was known to consist of thirty-one Companies, having 180 officers and over 4,000 non-commissioned officers and men, forming a nucleus which in case of war would be quadrupled by the addition of reservists employed in peace time on the State railways. France had a Railway Regiment comprising three Battalions, each of four Companies, supplemented by six volunteer Railway Detachments, each with about 1,300 men enrolled from among the employés of the principal railway companies. The Russian Army had four regular Railway Battalions working Trans-Caspian and Central Asian lines, and divided into seventeen Engineer and twenty-seven Traffic Companies.

In the United Kingdom there were three Royal Engineer Railway Units, and in 1905 the strength of two of them was seventy and that of the third sixty. The oldest of the three, the 8th (Railway) Company, had been created in 1882 to take part in the Expeditionary Force sent in that year to Egypt. The 10th (Railway) Company was formed in January, 1885, and was sent to Egypt to assist in the construction of the Suakin-Berber line. There was, also, in 1905, a Railway Reserve of 345 employés on British railways.

A comparison of foreign and British Railway Troops and Railway Reserves was thus distinctly unfavourable to ourselves. It had to be remembered, however, that whilst countries like Germany and France provided for the possible seizure and working of railways in adjoining countries,[1] in England we have no "adjoining country" to invade, and in 1905 there was no idea of our seeking to capture, construct and operate railways on the Continent of Europe. Railway Troops and Railway Reserves were thought to be wanted in the United Kingdom mainly, if not exclusively, for a limited range of home duties and for services akin to those already rendered in Egypt, the Sudan, China and South Africa.

It was, nevertheless, considered that better provision should be made for meeting railway requirements in oversea expeditions, and early in 1905 the railway managers on the War Railway Council were invited to give their opinion on the draft of a proposed series of "Regulations for the Utilisation of Railways in War" which were, probably, those referred to by Sir E. Percy C. Girouard in a paper on "Communication Services," published in the *Royal Engineers Journal* for August, 1906, in which he said :—

> Since the South African War the necessity of regulating railways for military use has been legislated for. Elaborate regulations have been prepared, and it will be to the thorough knowledge of and obedience to these that we must look for much of the success of railway working on a large scale in any future campaign abroad depending on this form of transport.

[1] "Let us consider how Continental Powers meet the railway problem, and what are the conditions which have led up to the organisation of their railway troops. Continental armies possess numerous railway troops. . . . They expect to capture railways in foreign territory where, on account of the whole population being actively or passively hostile, they would be compelled to provide every single man of the staff of the lines which they wished to work."—Capt. L. E. Hopkins on "Army Railway Organisation," *Royal Engineers Journal*, August, 1905.

Regarding the "Regulations" in question from the point of view of the interests and responsibilities in which they themselves were directly concerned, the railway managers expressed the opinion that there was much in them which did not apply to home conditions, and they suggested that a separate pamphlet, giving very brief directions in regard to the use of British railways in time of war, should be issued for the guidance of railway men in the United Kingdom.

Another document brought under their notice at about the same time was a "Memorandum on Railways in War, and the Necessary Peace Preparation for Working the Same." This paper was avowedly designed to apply to the construction, extension, repair and operation of railways in countries such as Somaliland, the Sudan, Persia or China. It was, in fact, expressly stated that the railway problems in the event of war in the United Kingdom were of an entirely different nature, and would not be dealt with in the Memorandum. The scheme put forward nevertheless closely affected the British railway companies since the list of peace-time preparations to be made for the achievement of the objects aimed at included two which it would not be possible to attain without their co-operation. One of them was a proposed expansion of the Special Railway Reserve into a Railway Corps on a much broader and better-organised scale, and the other was the proposed registration of a certain quantity of 4 ft. 8½ in.-gauge rolling stock in England, and of 3 ft. 6 in.-gauge rolling stock in South Africa, which, by virtue of agreements to be made, would be handed over, on payment of a valuation, immediately it was required for the purposes of war.

The Special Railway Reserve.

The 345 members of the Railway Reserve then already in existence had been drawn from a few classes of the subordinate grades of railway employés, and they were liable for active service only when the Army Reserve itself was called out. Under the scheme now put forward it was proposed :—

(1.) That each of the three Railway Units of the Royal Engineers should have its peace strength raised to 130 and its war strength to 250 ; that the three should be concentrated and provided with better facilities for training ; and that in operations abroad these units should devote themselves to railway construction work or the doing of rapid repairs, etc.

(2.) That the strength of the Railway Reserve should be increased to 986 officers and men, comprising eight departments, namely : Management, Traffic, Engineering, Locomotive, Telegraph, Accounting, Stores and Miscellaneous ; that the Reserve as thus reconstructed should form a complete Railway Corps, comprising all grades of railway officials and employés (ranking as officers, non-commissioned officers and men), capable of taking over the actual working of a railway system behind the army in the field, relieving the Royal Engineer Railway Units of this responsibility ; and that the Special Railway Reserve should be available for any expedition, small war or active service in any part of the world.

In the Memorandum referred to above it was said in reference to the

second of these proposals, and the one in which British railway companies were alone directly concerned :—

> The machinery must be provided which will enable us, with a small peace expenditure, to draw as required upon the enormous number of skilled and willing railway officers and employés on the railways of the United Kingdom to supply a staff to take over the working of any railways captured or newly constructed.[1]

Invited to give their views on the scheme and to say whether they would assist in carrying it out, the General Managers on the War Railway Council met the President (then the Director of Movements and Quartering) at Euston on March 24th, 1905. The railway representatives approved of the scheme in principle, especially commending the proposal that, in the event of the Railway Forces being engaged on active service, there should be such a division of duties as would leave the repair and construction of railways to the Railway Units of the Royal Engineers and the working of the lines to the practical railwaymen in the Reserve. The railway companies themselves, they proceeded, would be prepared to do anything they could to facilitate the object in view ; but the terms to be formulated should be such as would induce officers and men employed on the railways to render themselves liable to be sent abroad on active service.

It was explained to the President that railwaymen were members of superannuation funds, pension funds, widows and orphans funds and various other societies (for the benefit of themselves, their wives and their families), the membership of which they would have to resign if they went abroad. In view of this fact, and considering that they would also sacrifice their permanent positions and prospects of promotion, with many other advantages attached to the railway service, it would not be reasonable to expect them to accept the offer of the War Office unless a very substantial monetary inducement were held out to them so to do.

The terms suggested on behalf of the War Office were regarded by the railway managers as inadequate, and it was agreed at the meeting that the best plan would be for the War Office to formulate a draft scheme, embodying the financial and other conditions proposed, and submit it to the railway members of the War Railway Council for their consideration.

Nothing further was heard of the matter until February, 1911—that is to say, six years later—when it was again brought under the notice of the railway managers, five of the leading companies being now

[1] The military journals of this period contain many references to the proposal here in question. Thus the writer (" Nemo ") of an article on " The Organisation of the Corps of Royal Engineers," published in the *Royal Engineers Journal* for November, 1905, said :—" The Army is passing through a period of re-organisation. The future of the Corps of Royal Engineers is now under consideration with the rest." In regard to the Railway Units he thought it absolutely essential that an officer should at some period be employed on a commercial railway, and he continued :—" It remains to answer the question—Where shall we obtain in war the skilled subordinate officers and employés required outside the regular units ? The Telegraph and Railway branches must induce civilian employés on telegraphs and railways to join a special Reserve to come out in war. This class is comparatively limited, and careful arrangements must be made in peace to secure a sufficient supply."

invited to furnish from their staffs a sufficiency of officers and men to form a Railway Corps on practically the same lines as those projected in 1905. Once more, however, the companies, after further deliberations on the subject, arrived at the conclusion that the terms offered were insufficient to induce members of their staffs to serve abroad.[1]

Subsequently the railway managers were informed that the proposal for the creation of a Railway Corps would not be proceeded with, though advantage was taken by the military authorities of an alternative offer made by some of the companies to give facilities on their lines for the practical training of a certain number of officers and N.C.O.'s from the Royal Engineer Railway Units in railway operation.

R.E. Railway Units.

By the beginning of 1910 the proposals in regard to the R.E. Railway Units had been so far adopted that all three were stationed at Longmoor (Aldershot Command), where they were then employed on the construction and maintenance of a 4 ft. 8½ in. military railway connecting that camp with Bordon, on the London and South Western Railway. They also had workshops and all the necessary material for the repair of rolling stock, etc. Their peace training (as detailed in the "Corps Memo.," No. 620) was as follows:—Reconnaissance, survey and final location of a railway; platelaying; laying out station yards; laying out deviations; rapid laying of narrow-gauge tramway; railway bridging of all kinds; signal installation; water supply; repairs to telegraphs and telephones necessary for working construction lines; working of electric block instruments; armouring trains; construction of temporary platforms, and working and maintenance of construction trains. In addition to this, a certain proportion of the men were undergoing courses of instruction in "fitting" and "firing" on civil railways, the course in the former subject usually lasting nine months and that in the latter subject six months.[2]

Rolling Stock for Overseas.

The proposed registration of British rolling stock for use on the occasion of expeditions or of "little wars" overseas formed part of the same general scheme since it was upon this rolling stock that the Special Railway Reserve might have to rely in working the lines either taken from the enemy or built by the Royal Engineer Railway Units. It was assumed that the enemy would have removed or destroyed the bulk of his own rolling stock; and in this case the lines—if of the 4 ft. 8½ in. gauge—might be of no service unless rolling stock could be sent out to where

[1] In reference to this question of terms, on which, as will be seen, everything depended, Captain Hopkins had written, in the article already quoted:—"Civil labour can always be obtained *by paying for it*, and it is *cheaper to pay a high price for a special work*, and have it well done, than to keep up continual expenditure on military railway troops, and perhaps get the work not so well done in the end." On the other hand it had been expressly said in the official "Memorandum on Railways in War":—"The machinery must be provided which will enable us, *with a small peace expenditure*," etc. (see p. 21.)

[2] "General Principles of Organisation and Equipment, Royal Engineers." *Royal Engineers Journal*, February, 1910.

it was wanted. The War Department wished, however, to avoid that locking up of money during peace time which would result if the Government built rolling stock for itself in readiness for any possible contingency, and in January, 1905, the President of the War Railway Council, acting on behalf of the Department, laid before the railway members a proposal that the leading railway companies should enter into an agreement with the War Office under which they would, on demand, provide the Department with a quantity of rolling stock, not exceeding ten engines and 300 wagons per company, at a valuation to be arranged at the time of handing over, or, failing an amicable settlement, by arbitration.

Under the terms laid down in the first draft of the proposed agreement—which was to be in force for fifteen years—the companies were, in the event of rolling stock being required for warlike purposes, to supply locomotives and wagons in accordance with certain specified types, having them ready for the testing and approval of a War Department Inspector within forty-eight hours of the time they were called for. Only those in good working order and in actual use at the time were to come into consideration at all. Any that were rejected by the Inspector were to be replaced by others. Those approved were to be taken to pieces by the companies, carefully packed and then placed on board ship within three weeks of the Inspector's approval. They were to be accompanied, also, by the bolts, rivets and other material necessary for their re-erection on arrival at destination, together with all the spare parts that might be needed to keep the stock in running order for at least a year. Working drawings, in duplicate, to assist in the work of reconstruction, were also to be sent. In addition to the price to be agreed upon, or to be fixed by arbitration, the companies would be paid 2½ per cent. for testing, packing and placing on board, with an additional five per cent. by way of bonus. Some of these conditions were subsequently slightly modified.

The railway companies were perfectly ready to enter into the desired arrangement—provided they were offered what they considered suitable terms. What they stipulated for, through the General Managers on the War Railway Council, was that the War Department should, in time of peace, pay them a registration fee per annum of £10 per engine, £5 per passenger car and £1 per wagon; that the payment to be made for such of the rolling stock as might eventually be taken over should be twenty per cent. in addition to the original cost as entered in the owning companies' books; and that the terms should be settled in advance between the companies and the War Office, and not left to be decided by arbitration whenever the transfer took place.

To this it was replied that, having regard to the remoteness of any contingency in which the need for the use of 4 ft. 8½ in.-gauge rolling stock would arise, the War Office was not prepared to pay any registration fee whatever; and, inasmuch as the railway managers regarded a registration fee as an indispensable condition, without which they

would have no inducement to entertain the scheme at all, the negotiations could not then (1905) be carried any farther.

In August, 1907, the question was revived as the result of a definite request that the railway companies of the United Kingdom would undertake to provide 100 locomotives and 3,300 carriages and wagons, of certain specified types, for use overseas, if required. Thereupon the War Office authorities were asked whether they would agree to pay the registration fees and cost of stock as laid down in the terms defined by the companies in 1905. The answer given was in the negative. Certain of the Colonial Governments, it was said, had entered into an agreement to supply the War Department with 3 ft. 6 in.-gauge rolling stock without asking for any registration fee, while they were willing to accept lower terms as regarded payment than were asked for by the English companies. It was suggested that the latter should make a similar agreement in respect to their 4 ft. 8½ in.-gauge stock. The railway managers replied that, having regard to the fact that British railways were commercial undertakings, and, therefore, in a position quite different from that of the Colonial Governments, they could not agree to reduce the charges they had already specified. Thereupon the matter dropped.

So it was that two proposals which, if carried out, would have established closer relations between the railways and the War Department came to naught on a question, not of principle, but of terms. It might, of course, have been suggested by the railway companies that, *as* "commercial undertakings," they could hardly be expected to keep staffs and rolling stock always ready for dispatch at a few hours' or a few days' notice—regardless of transport needs and conditions at home—to any part of the world where the British Army might be engaged on military operations in which neither the companies nor any question of national defence would be concerned at all. Any such possible objections as these were, however, not even suggested, and the companies were ready to render every possible assistance—if only an adequate return had been assured to them for the obligations they and their staffs were invited to undertake.

The conflict between the views of the railway representatives and the spirit of economy by which British military policy was at this period so powerfully influenced was thus fatal to the prospects of any mutually satisfactory arrangement being made, on the lines stated, in advance of that national emergency of 1914 which was, nevertheless, to lead to the dispatch overseas alike of British railwaymen and of British railway rolling stock on a scale little dreamed of only a few years previously, when the need for such dispatch had been regarded as a "remote contingency," only to be provided for in peace time if this could be done at—a practically nominal cost!

CHAPTER IV.

CONTROL QUESTIONS.

It will have been seen that, as originally designed, one of the duties of the War Railway Council in the event of mobilisation or on the occasion of a national emergency was to be that of acting as a medium of communication between the War Office and the railways, and of making all the necessary arrangements in connection with the rail transport of troops. This seemed to suggest that the Council was to perform, in these respects, the functions it had previously been thought would devolve upon the Engineer and Railway Volunteer Staff Corps.

At the meeting, however, on October 14th, 1903, two of the railway managers suggested that in time of national emergency it would be quite impracticable to call the Council together and expect it to act as the said medium of communication, since this procedure would involve the loss of much valuable time. These suggestions were duly considered by the military authorities, and at the next meeting, on July 14th, 1909, it was announced that, following on a decision arrived at by the War Council, the War Railway Council was to be regarded thenceforward as a purely advisory body, and one which would assume no administrative or executive functions in time of mobilisation, when it would be impossible to ask the Council to sit continuously and undertake those functions.

While meeting the views of the railway representatives, and relieving the Council of some of its responsibilities, this decision left open the question of the control of the railways in regard, more especially, to the movement of troops for home defence. Hence, as was further announced, the idea had been mooted that there should be, during a time of emergency, a Director-General of Railways, who would be attached to and be practically a permanent official of the War Office, acting at such a time as a medium of communication with the railways, as Colonel Sir Percy Girouard had done in South Africa.

This proposal was concurred in by the Council, and shortly afterwards a sub-committee, composed of three railway members, two Admiralty members and one War Office member, was, by direction of the Army Council, appointed to draw up a scheme for the control of home railways in time of war. The scheme took the form of a series of "Instructions to General Managers" and was submitted to the War Railway Council on December 13th, 1910, for revision and approval.

In the first draft of these "Instructions" (which were designed

generally to inform railway managers of the conditions that would come into force and the nature of the duties and responsibilities that would devolve upon them on mobilisation) use was made of the designations "Director of Railways" and "Railway Control Officer" as recognised in the South African War and in the "Regulations for the Utilisation of Railways in War"—that is to say, war mainly overseas. The application of these titles to military officers in this country was, however, objected to by the railway managers on the ground that the use of them here would be misleading. There could, they argued, be no comparison between the conditions in South Africa—where Sir Percy Girouard, in taking over railways from the enemy, had to create a staff to operate them under his own direction—and railways in the United Kingdom which would still be worked by the companies who owned and operated them. The justice of this criticism being recognised, "Director of Railway Transport" was substituted for "Director of Railways," and "Railway Transport Officer" for "Railway Control Officer."

There was a further significance in this change of titles, since it set aside the possibility—then being pointed to in the military press and elsewhere—that in time of war the railways of the United Kingdom would pass under the supreme control of a representative of the military powers who would, in effect, be the equivalent of not only a Director, but a *Dictator* of Railways.

Principles in Practice.

As the final result of the relations existing between the War Office and the War Railway Council for so long a period, the "general principles governing the control, maintenance and administration of railways in war" were definitely fixed; a "Railway Transport Service" was organised on a comprehensive scale; exact details and instructions concerning movements by rail and other transport matters were issued; provision was made for the fitting up and maintenance of ambulance trains; the functions and the methods of operation of armoured trains were explained; guidance was given to military officers who had to report upon the capacity of a line of railway and its vulnerable points, and a good deal of statistical information, obtained from the railway companies, was published, included therein being tables relating to the working of engines; the capacity of different kinds of rolling stock for troop movements; the truck-space taken up by Army vehicles, and the composition of railway trains required for units at war strength conveyed in British rolling stock. All these matters are dealt with either in "Railway Manual (War)," first published in 1911, or in "Field Service Regulations," Part II., issued in 1909, both subsequently reprinted, with additions, the former work in 1914 and the latter in 1913. Much information concerning "Transport by Rail" is also given in the "Field Service Pocket Book."

Among the general principles laid down, it was stated in "Railway Manual (War)" that "So delicate and complex a matter is railway management that the efficient co-operation of a railway system can only be assured when the cordial co-operation of the railwaymen is combined with the strictest obedience of regulations by the troops"; while in the "Field Service Regulations" it was said: "A railway system is a highly sensitive machine, easily dislocated by unskilled treatment; it is at the same time an organisation most vital to the maintenance of the Army." It was further stated in the "Manual" that "every war in which railways have played an important part has emphasised the necessity for a military controlling authority," and that, broadly speaking, there were three different conditions—each calling for the exercise of such authority—under which railways would be utilised on service, namely:—

1. Where the actual working is left in the hands of a friendly administration, which is allowed to carry on its civil traffic as in peace time so long as precedence is given to military traffic.
2. Under conditions similar to the above, except that the state of the country or the attitude of the civil population necessitate military control of civil as well as military traffic.
3. In a hostile or disaffected country where it becomes necessary to replace the civilian working personnel by a military organisation.

It is, of course, the first only of these considerations that concerns the working of British railways; but all three come within the purview of the official works in question, and all are provided for with the necessary elaboration of military and technical detail.

Railway Transport Service.

The creation of a Railway Transport Service was, it may be remembered, one of the original purposes of the War Railway Council, since the duties assigned to it in 1896 had, as shown on page 12, included that of elaborating rules for the organisation of a body of Railway Staff Officers who, located at railway stations to be selected as far as possible by the Council, would act as intermediaries between the railways and the troops. On the outbreak of the South African War, in 1899, officers of this type were placed on duty at all leading railway stations in Great Britain where any considerable volume of military traffic had to be dealt with; though it was in South Africa itself that the process of elaborating rules for the creation and guidance of such a service was first carried through, by Sir Percy Girouard, on a comprehensive scale. The precedents established on that occasion were doubtless of advantage to the sub-committee of the War Railway Council which dealt with the subject in the "Draft Instructions to General Managers" drawn up in 1910; but the details of the Railway Transport organisation were further elaborated in the "Railway Manual (War)" and the "Field Service Regulations."

In the former publication the functions of the *personnel* of the service are thus defined and commented on :—

1. To be the intermediaries between the Army and the technical administration of the railway.

2. To see that the ordinary working of a railway is carried on in such a manner as to ensure the greatest military efficiency.

3. To see, on the other hand, that the demands of the Army on the railway, which must always be addressed through the Railway Transport Establishment, are, subject to military exigencies, so regulated as not to disorganise the working of the railway system as a whole.

Of these the third is of great importance, for it can be easily understood that the officers of a civil railway administration are not in a position to discriminate between the demands of the various branches and departments of the Army, nor can they class them in any definite degree of urgency.

It is, therefore, necessary to centralise the control of the railway and to prevent its unauthorised use by individual officers whose actions, the result of which they themselves are unable to foresee, may cause serious delay, if not a positive breakdown.

The administration of this Railway Transport Service was put under the supreme control of the Quartermaster-General, whose branch was responsible for "railway transport," among a variety of other matters. At the head of the service itself, there is a Director of Railway Transport, who may be assisted by a Deputy-Director stationed either at General Headquarters or at the headquarters of the Inspector-General of Communications. At each of the principal railway centres on the line of communication there is a Deputy-Assistant-Director who exercises a general control over all military traffic within the section or area to which he is assigned ; keeps the Director informed as to the railway requirements, and, in conjunction with the railway officials, arranges troop movements, himself supervising the entrainment and dispatch of any large body of troops.

Then, also, at important stations and junctions the Deputy-Assistant-Director within whose area they are situated is, in turn, represented by a Railway Transport Officer, who, wearing on his left arm a badge marked "R.T.O.," is entrusted with a wide range of duties. At the station where he is posted he acts as the channel of communication between the military authorities and the railway officials. Whatever the rank of the R.T.O. himself, his own authority in regard to the movement of troops and their accessories is paramount. If the station officials should receive orders or directions from other officers, they are to refer to the R.T.O. He himself must superintend all entrainment and detrainment of troops at his station, detailed instructions in respect thereto being given, so that confusion and delay may be avoided. He is responsible for matters of discipline and sanitation, and is to be provided with the necessary police for the enforcement of the Administrative Commandant's orders. Keeping in close touch with the railway executive officials, he must always be ready to assist them, and must not interfere with them or their subordinates in matters of technical detail.

Among still other duties, he is to see that rolling stock is loaded to the fullest extent permissible under the railway regulations, and that trucks are not kept under load at destination, except with the permission of the D.A.D.R.T.; though experiences during the Great War were to show that these two last-mentioned requirements were very far indeed from being always observed.

The efficiency alike of the railway arrangements in general and of the Railway Transport Service thus organised under peace-time conditions was well tested in the Army manœuvres of September, 1913. How the Service worked on that occasion is told by Major A. M. Henniker, R.E., in the *Army Review* for April, 1914 ("Troop Movements by Rail in the United Kingdom; with special reference to the problems involved for the Railway Companies at Manœuvres in peace time"), while further details as to the nature and extent of the railway transport will be found in the *Great Western Railway Magazine* for November, 1913.

Major Henniker states that the aggregate of the military traffic amounted, in round numbers, to 38,000 men, 8,000 horses, 100 guns and 1,400 vehicles. Nine out of the eleven principal British railway companies were directly concerned in the moves, which, he says, required "foresight, arrangement and preparation" over lines extending from Glasgow to Plymouth, Portsmouth and Dover; and from Scarborough and Colchester to Pembroke Dock, Holyhead and Ireland. The railway companies, he proceeds, had to solve in advance a variety of problems, such as—By which of several possible routes shall a certain unit reach its destination? At what time are the trains to be handed over by one company to another? What engines are to be provided for working the trains? Then each company had to work out the details of its own share in the programme, including the collection of the particular kinds of rolling stock wanted and the making up thereof into trains of a special composition on convenient sidings which might be many miles from the place where the trains would be wanted; while, among a mass of other details, care had to be taken to ensure that the empty trains thus sent forward from various points arrived at the entraining station in the right sequence, at the right time, and were able to leave with their load without the delay which might lead to a widespread dislocation of traffic.

In one instance, Major Henniker relates, an officer was profuse in his condemnation of the railway people because they would not alter the composition of a certain train although some hours would elapse before his men were due to leave by it. Inquiry showed that this particular train had been made up at sidings just 100 miles away, and, at the time the officer presented his request, had already joined the stream of empty trains converging on the entraining station. In another instance, a commanding officer sent word that his unit was ready to start, and he would like it to leave some hours earlier than the time which had been fixed. There were, however, ten other trains which should leave before his, and there were at least a dozen others

the timings of which would have had to be altered if the arrangements had been suddenly changed to meet the officer's wishes.[1]

What part the Railway Transport Establishment played in the organisation which effected the good results attained in 1913 is thus told by Major Henniker :—

> At Army Headquarters, and dealing with the move as a whole, is the Director of Railway Transport or his Deputy ; in close touch with the railway official in charge of the move on each line is an Assistant or Deputy-Assistant-Director.
>
> At the entraining stations the station-master or other railway official is paralleled by a Railway Transport Officer. The primary duty of the two last-mentioned is to carry out the programme ; neither can add to or alter it in any material particular. Additions or alterations asked for by the troops are referred to the Deputy-Assistant-Director of Railway Transport, and several, perhaps conflicting, requests may reach him simultaneously. Where requirements are conflicting, the Deputy-Assistant-Director of Railway Transport decides himself, or refers to the D.R.T., which is to have the preference. The railway officer in charge can say at once what is the best arrangement the railway can make. The Deputy-Assistant-Director of Railway Transport then notifies the troops concerned, and the railway officer circulates to the stations and departments of the line the modifications agreed upon.

It did not, of course, necessarily follow that the successes attained in the peace-time Army manœuvres of 1913 would stand the test of a national emergency such as that which was so soon to follow ; but one may now recall with interest the fact that, in dealing with the question as to whether or not the railways would be able to cope successfully with the moves required on general mobilisation, Major Henniker said (the passage in italics being so given in the original) :—

> It is satisfactory to know that the companies on whom the brunt of mobilisation moves will fall are confident of their ability to carry them out successfully. Their one stipulation is *that units entraining must adhere rigidly to the programme laid down for them.*

All the provisions here in question for the control and working of military rail-transport—together with many others which it is unnecessary to detail—were designed, during the period under review, as a general basis for operations at home or in any part of the world, subject to such modifications as circumstances might require. In their comprehensive scope they compared favourably with the corresponding systems of organisation then already completed, or under process of completion, in Germany, France and other countries, while they assured to us, when the emergency of 1914 arose, a system for controlling and regulating military rail-transport no less efficient than that of any of the other combatants, whether friend or foe.

[1] Instances almost identically similar to these were to occur during the early days of the Great War until they were effectively checked by the higher military authorities.

CHAPTER V.

THE WAR CLOUDS OF 1911.

CERTAIN critical developments in the domain of international politics in 1911, and the prospect, at one time, that this country might be involved therein, gave a distinct impetus to the question of preparing our railways to meet all requirements which would devolve upon them in the event of any grave national emergency.

A succession of incidents had already suggested that Germany was still bent on breaking the Anglo-French *entente*, and had become possessed of the idea that she could intimidate France, more especially in regard to her Morocco policy, without incurring the risk of having to deal with England as well. These conditions may, indeed, have formed the real basis for the paradox, pointed to by Sir Edward Grey in the House of Commons on March 13th, 1911, that, contemporaneous with the progress of international amity, there was then proceeding an unprecedented expenditure upon arms and munitions of war.

In Morocco itself, the revolutionary movement among the Berbers, in March led to the strengthening of the French forces in Casablanca, while in April the Sultan appealed to France for assistance against the tribesmen who were besieging him in Fez. An expedition of French and native troops was sent to his help, Fez was relieved, and the trouble seemed, for the time being at least, to have been brought to an end.

Suddenly, on July 1st, without warning, and without any apparent justification, Germany announced that she had dispatched a warship to the "closed" port of Agadir "to safeguard the persons and property of German subjects," although, as a matter of fact, there were no German subjects in Agadir. The warship so dispatched was the gunboat *Panther*. Another and a larger vessel, the *Berlin*, arrived at Agadir soon after.

For various reasons which need not here be detailed, it was concluded that Germany was bent on re-opening the whole Morocco question in her own interests and to the special detriment of France, and a grave crisis followed. On July 7th, Mr. Asquith significantly stated in the House of Commons :—"His Majesty's Government consider that a new situation has arisen in Morocco in which it is possible that future developments may affect British interests more directly than has hitherto been the case." This intimation, however, did not check Germany in making and pressing on France demands of so exorbitant a nature that that country declined to carry the negotiations any further. On July 21st came Mr. Lloyd George's Mansion House speech, wherein he said :—

I would make great sacrifices to maintain peace. I conceive that nothing would justify a disturbance of international goodwill except questions of the gravest moment. But if a situation were to be forced upon us in which peace could only be preserved by the surrender of the great and beneficent position Britain has won by centuries of heroism and achievement, by allowing Britain to be treated where her interests were vitally affected as if she were of no account in the Cabinet of nations, then I say emphatically that peace at that price would be a humiliation intolerable for a great country like ours to endure.

On July 27th Mr. Asquith sounded a further warning note in the House of Commons, and early in August Germany withdrew her original demands, substituting for them a fresh series which became the subject of "conversations" in Berlin. These were still so far grave that Germany and France both concentrated troops on their frontiers as a "precautionary measure," while the prospect of an early outbreak of war led to a panic on the Berlin Bourse on September 9th, and to a run on the German Savings Banks a week or so later.

In England the situation had become further complicated by a series of labour disputes which, occurring concurrently with these international troubles, brought out dockers, carters and railwaymen, and finally threatened to dislocate sea and land transport services at the very moment when the British Home Fleet was concentrating on the north-east coast, when various military measures were being quietly taken throughout the country as a precaution against possible contingencies, and when, therefore, it was a matter of vital importance that the transport services which these labour troubles specially affected should be maintained in a condition of complete efficiency.

With the eventual settlement of the international crisis by the signing, on November 4th, 1911, of the two treaties between France and Germany we are not here concerned. What does concern us, rather, from the point of view of the present work, is the fact that the various political conditions indicated were the direct reason for the whole subject of (1) the relations of the State to the railways in time of war; (2) the guarantee of efficient transport in war-time in the interests alike of military and naval movements, the feeding of the population and the maintenance of trade and commerce, and (3) the perfecting of peace-time preparations for the attainment of these ends, coming up for revision in this country in 1911 and 1912. It was, in effect, the practical measures adopted under these conditions that, coupled with the continuous series of steps taken since the creation of the Engineer and Railway Volunteer Staff Corps in 1865, finally led to the British railways, at least, being fully prepared for the emergency that arose on the declaration of war in August, 1914.

Provisioning of London.

Among the questions which presented themselves for consideration in 1911, under the circumstances just narrated, was one as to what means it would be necessary to take should this country become engaged in a war with a Continental Power which might lead to the closing of

all the ports on the east and south-east coast from (say) Hull to the mouth of the Thames and thence on to Portsmouth.

The problem was referred to a sub-committee of the Committee of Imperial Defence, and a considerable amount of data was collected as to the extent alike to which London was dependent on sea-borne supplies and to which other ports on the western and south-western coasts could be depended on for such supplies (exclusive of coal) in the contingency suggested.

It was found that the more important of these ports have good sea connections, and that they have, also, good railway connections with London, together with substantial surplus accommodation of which advantage could be taken in case of need. In addition to these larger ports, there are, along the same coasts, a number of small ones which might, it was thought, also serve a useful purpose.

Other parts of the country were not overlooked; but London, with its vast population, its commercial importance, and its position as the heart and centre of the Empire, naturally claimed first attention.

The facts gathered by the sub-committee were, however, incomplete without further evidence as to whether or not, assuming that the food supplies required by London were duly received at the western and south-western ports in question, the resources of the railways would be equal to the responsibility of ensuring their transport and distribution. This particular phase of the problem was submitted to the General Managers of the London and North Western, the Great Western, the Midland, the Great Northern, the Great Central and the London and South Western Railways for their consideration.

On August 1st, 1911, the General Managers presented to the Right Hon. Lieut.-Col. J. Seely, M.P., D.S.O., then Under-Secretary of State for War, a report in which they gave a comprehensive survey of the railway position in regard to the matters at issue, and declared, in effect, as the result of their careful consideration of the subject, that, if only the flow of a sufficient volume of food imports into the principal ports on the west and south-west coasts were assured, the railway facilities would be fully equal to their efficient distribution therefrom.

CHAPTER VI.

ACT OF 1871 OR ACT OF 1888?

Among other problems of the situation that arose in 1911 was one which had been under consideration for many years, but was then still unsolved.

Everybody assumed, as a matter of course, that in the event of a national emergency the Government would want to exercise control over the railways, in order to ensure the most efficient use thereof for the purposes of naval and military transport; but in 1911 there was still scope for speculation as to the precise nature of the legislative powers under which action would be taken.

Legislation in regard to the use of British railways for troop movements dates back to 1842, when, by section 20 of "An Act for the better Regulation of Railways and for the Conveyance of Troops," it was laid down that—

> Whenever it shall be necessary to move any of the officers or soldiers of her Majesty's forces of the line . . . by any railway, the directors shall permit them, with baggage, stores, arms, ammunition and other necessaries and things, to be conveyed, at the usual hours of starting, at such prices or upon such conditions as may be contracted for between the Secretary of War and such railway companies on the production of a route or order signed by the proper authorities.

By section 12 of an Act passed in 1844 (7 & 8 Vic. c. 85) railway companies were required to provide conveyance for troops and military necessaries at certain maximum fares and rates. In 1867 these provisions were extended to the Army Reserve, and in 1883 they were revised under the Cheap Trains Act of that year ("An Act to amend the Law Relating to Railway Passenger Duty and to amend and consolidate the law relating to the conveyance of the Queen's forces by railway"), section 12 of the Act of 1844 being repealed except so far as it applied to Ireland and to the conveyance of forces by companies who lost the benefit of the Act of 1883.

These enactments, it will have been seen, related only to compulsory conveyance at certain rates and fares. They gave the Government no power of actual control over the railways in time of war. Provision for the exercise of this power was made by two other Acts, passed in 1871 and 1888 respectively; and in 1911—if not, indeed, down almost to the outbreak of hostilities in 1914—it was not known on which of these two Acts, conferring widely different powers, the railway policy of the Government, in the event of war, would be based.

The earlier of the Acts (the history of which offers, in itself, some

points of interest) was the Regulation of the Forces Act, 1871 (34 & 35 Vic. c. 86), section 16 of which ("Power of Government on the occasion of emergency to take possession of railroads") was as follows :—

When her Majesty, by Order in Council, declares that an emergency has arisen in which it is expedient for the public service that her Majesty's Government should have control over the railroads in the United Kingdom, or any of them, the Secretary of State may, by warrant under his hand, empower any person or persons named in such warrant to take possession in the name or on behalf of her Majesty of any railroad in the United Kingdom, and of the plant belonging thereto, or any part thereof, and may take possession of any plant without taking possession of the railroad itself, and to use the same for her Majesty's Service at such times and in such manner as the Secretary of State may direct; and the directors, officers and servants of such railroad shall obey the directions of the Secretary of State as to the user of such railroad or plant as aforesaid for her Majesty's Service.

Any warrant granted by the said Secretary of State, in pursuance of this section, shall remain in force for one week only, but may be renewed from week to week as long as, in the opinion of the said Secretary of State, the emergency continues.

There shall be paid to any person or body of persons whose railroad or plant may be taken possession of, in pursuance of this section, out of the moneys to be provided by Parliament, such full compensation for any loss or injury they may have sustained by the exercise of the powers of the Secretary of State under this section, as may be agreed upon between the said Secretary of State and the said person or body of persons, or, in case of difference, may be settled by arbitration in manner provided by "Land Clauses Consolidation Act, 1845."

Where any railroad or plant is taken possession of in the name of or on behalf of her Majesty, in pursuance of this section, all contracts and engagements between the person or body of persons whose railroad is so taken possession of, and the directors, officers and servants of any such person or body of persons, or between such person or body of persons and any other persons in relation to the working or maintenance of the railroad, or in relation to the supply or working of the plant of such railroad, which would, if such possession had not been taken, have been enforceable by or against the said person or body of persons, shall during the continuance of such possession be enforceable by or against her Majesty.

For the purpose of this section, "railroad" shall include any tramway, whether worked by animal or mechanical power, or partly in one way and partly in the other, and any stations, works, or accommodation belonging to or required for the working of such railroad or tramway.

"Plant" shall include any engines, rolling stock, horses, or other animal or mechanical power, and all things necessary for the proper working of a railroad or tramway which are not included in the word railroad.

This Act seems to have been passed without the knowledge of certain authorities in the War Office who, immediately they saw it in print, regarded with great disapproval the prospect which seemed to them to be opened out alike to that Department, to the Government and to the country by the clause here in question. They looked upon these provisions as not only useless but dangerous. They interpreted the phrase, "to take possession," as meaning that the Government would, for the time being, get rid of, or suspend, all the responsible managers of the railways, and, stepping into their shoes, themselves seek to manage and work the lines with the help of a staff improvised for the occasion. "If," wrote one prominent Government official in a Minute on the subject,

" the traffic of the civil population is to be conducted by the Crown, all the responsibilities for accidents, the risk of which would be largely increased, would rest with the Treasury ; if it is to be stopped altogether, the inconvenience to the public and the compensation to be paid will be greatly enhanced. The railway system," he proceeded, " is an intricate machine, very easy to put out, but most difficult to put into working order, and probably no greater evil in any national emergency could be inflicted upon Parliament than to have such a system controlled by managers who have been impressed for ' the week ' during which the Secretary of State's order remains in force." It was declared that the Government would run the risk of having to face unknown and unfathomable claims for compensation and damages ; and these various possibilities, it was urged, were the more inexpedient since all that was wanted was that, in case of emergency, the Government should be able to claim priority for naval and military traffic.

These views were put before Mr. Cardwell, then Secretary for War, and he is said to have " admitted " that the power taken under the Act was in excess of requirements and " would never be used." It was not thought convenient, however, to make any immediate alteration. The decision was arrived at to treat section 16 of the Act as a dead letter, and to acquire lesser powers at the first opportunity.

This opportunity did not arise until 1888, when the National Defence Act of that year was passed. No attempt was made in it to repeal section 16 of the Act of 1871, the view taken being that this particular section could be dropped out of any future codification of the Defence Acts, and, in the interim, be treated as a dead letter. All that was now done was to secure " Power of Government, on occasion of national danger, or great emergency, to have precedence in traffic of railway." This was provided for by section 4 of the National Defence Act, which laid down that—

1. Whenever an order for the embodiment of the militia [1] is in force, it shall be lawful for her Majesty the Queen, by order signified under the hand of a Secretary of State, to declare that it is expedient for the public service that traffic for naval and military purposes shall have on the railways in the United Kingdom, or such of them as is mentioned in the order, precedence over other traffic.

2. When any such order is in force as respects a railway, an officer of any part of her Majesty's naval or military forces acting under the authority of a Secretary of State or the Admiralty may, by warrant under his hand addressed to the railway company working that railway, require that such traffic as may be specified in the warrant shall be received and forwarded on the railway in priority to any other traffic, and the company shall comply with such warrant, and shall, so far as may be necessary, suspend the receiving and forwarding of all other traffic on such railway.

Penalties were to be imposed in case of non-compliance ; any warrant issued was not to remain in force longer than one month unless renewed ; reasonable remuneration, fixed by agreement or arbitration, was to be paid ; and claims for compensation on account of loss were to be

[1] By Order in Council No. 256, 1908, this section was applied to the Territorial Force.

decided by the Government instead of being referred to arbitration, as laid down by the Act of 1871.

The expectation that the later Act would supersede the earlier one was, at the outset, so general that when, in 1889, Sir George Findlay introduced to public notice the scheme referred to on page 8, he took it for granted that State control would be exercised under the Act of 1888, and did not think it necessary even to mention the Act of 1871. "The writer's view," he said, "is that in time of war when, *in accordance with the National Defence Act of* 1888, the railways may be called upon by the Secretary of State for War to suspend, so far as may be necessary, the ordinary traffic, and to devote the railways in priority to military purposes, the principal railway officials should," etc.

In March, 1890, it was reported that, in the event of mobilisation, the State would take possession of the railways under the Act of 1871; but fresh official pleas were advanced in favour of the Act of 1888 and it was concluded, presumably, that these views would prevail since the "Draft Instructions" drawn up by the War Railway Council in 1910 for the guidance of General Managers were, as stated therein, to come into effect "on the order for a general mobilisation of the forces, or on the issue of an order of his Majesty, under section 4 of the Defence Act, 1888," the Act of 1871 being ignored.

The matter seems to have remained in abeyance until the possible need for definite action, following on the course of events in 1911, led to a revival of the controversy.

Any assumption that, if the State "took possession" of the railways under the Act of 1871 it would, also, take over their management and operation was, of course, wholly unwarranted. Provided that the Government could ensure the satisfaction of traffic requirements dictated by considerations of national policy—this being all they would require—there was no reason why the actual management and operation of the railways should not remain in the hands of those already concerned therein. From this point of view the phrase "control of the railways" had only a limited interpretation, and did not include the wider idea of such "control" as was to be found, for example, in Germany, where the State not only possessed the railways (or most of them), but worked them, for the purposes alike of military and of civilian traffic, with its own staff of railway servants.

As against the Act of 1888, there was the consideration that the claim to priority for Government traffic applied only to individual lines, and that no provision was made for the whole of the railways being regarded and worked as a single system so that naval or military traffic could, in case of need, be forwarded by alternative routes regardless of the separate ownership of the different lines. It certainly was suggested that there might be a voluntary arrangement among the railway companies themselves. On the other hand, it was pointed out that a Joint Committee of Railway Managers, working on this basis, would have no power to enforce their views or decisions, and that a single company,

keen on getting a maximum of possible traffic for itself, might bring the arrangement to a deadlock.

Nor was it really the case that it would suffice if, in the event of an emergency, the Government were able simply to claim priority for their own traffic. Conflicting claims might be presented to the railways by officers in either or both of the services concerned for priority to be given to their own particular demands, without reference to requirements in other directions or to the limitations of traffic facilities, no recognised authority being available to decide between them. Experiences of this kind were a leading cause of the condition of chaos to which the French railways were speedily reduced on the outbreak of the Franco-German War in 1870. Alternatively, trouble might arise if the naval and military authorities, while agreeing among themselves, could monopolise the transport facilities without regard for the food supplies of the civil population.

Another material point was that the Act of 1888 could not be applied before the order for the embodiment of the Militia (or Territorials) had come into force, and there was much that might require to be done, in the way of precautionary or preliminary measures, before then.

Views of the Railway Companies.

The railway companies themselves not only favoured the Act of 1871, for reasons such as those just given, but they brought forward certain definite and essentially practical proposals as to the management and working of the railways during the period over which the emergency and the State possession of them might alike extend.

These proposals were included in the report on the provisioning of London presented on August 1st, 1911, to the then Under-Secretary of State for War by the General Managers of the London and North Western, the Great Western, the Midland, the Great Northern, the Great Central and the London and South Western Railways. In the course of this report it was said :—

> It is recommended that the General Managers who have already been consulted be formed into a permanent Committee, with power to add to their number, with an Under-Secretary of State acting as chairman, and be nominated by the Secretary of State immediately an emergency is declared to carry out the powers set forth in the Regulation of the Forces Act of 1871.

This view was strongly supported by Mr. (afterwards Sir Frank) Ree, then General Manager of the London and North Western Railway Company, in some evidence which, after consultation with the General Managers of other leading companies, he gave before the Standing Sub-Committee of the Committee of Imperial Defence early in 1912. He recommended, in the first place, that the Government should rely on the Act of 1871 since, by so doing, they would ensure the possibility of the railways being worked as a single unit. It would, he suggested, be impossible to carry out any voluntary arrangement between the companies and the War Office, having regard to the number and variety of the interests

concerned. In the event of action being taken under the Act of 1871, a Committee of Railway Managers could be appointed to work the railways on behalf of the Government, as recommended in the "Provisioning of London" report, the further appointment of an Under-Secretary of State as chairman meaning, in actual practice, that he would be called in to exercise his authority only in the event of some company refusing to carry out the directions of the committee. With all the railways brought under a central control there should be no danger of any conflict of interests as regarded the requirements alike of the Army, the Navy, the food supply of the country, or the needs of general trade. On the subject of financial considerations, Mr. Ree said the railway companies had in their mind a pool from which each of them would take an allotted proportion of the receipts, after deduction of working expenses. In this way the earlier fears that the Government might be faced by "unfathomable liabilities" would be groundless. He did not anticipate there would be any difficulty in getting the companies generally to come into the agreement he had outlined, or in settling the question as to the compensation to be paid.

The General Managers' report of August 1st, 1911, had also contained the following :—

> During the course of this inquiry we have been impressed by the desirability of having some central body at which matters from time to time referred to railway companies by various Government departments may be considered as a whole. At present it frequently happens that some question is referred to the railway companies by, e.g., the War Office, and, when that has been dealt with, some other question is referred by some other department which alters the standpoint from which the first question should be considered.
>
> There are other obvious inconveniences attending the present practice, and we are, accordingly, of opinion that some permanent consultative body should be formed, consisting of the railway representatives parties to this reference and representatives of, say, the War Office, Admiralty, Home Office, Board of Trade and, if necessary, the Treasury, with a permanent chairman.

This proposed appointment of a consultative committee was also supported by Mr. Ree in his evidence before the sub-committee. All questions relating to rail transport in connection with national defence, and other matters cognate thereto, should, he suggested, be referred to such a committee so that the Government could have its assistance, not only in time of emergency, but in time of peace ; while the giving of contradictory instructions by different departments, as had occurred in the past, would be avoided. If, too, the committee were formed at once, it would serve the further purpose of educating the members in matters relating to naval and military transport before any emergency arose. He recommended that the committee should consist of the General Managers of eight of the principal railways and that it should supplement the existing War Railway Council, whose functions, however, as a mobilisation council would not be interfered with by the operations of the committee itself.

CHAPTER VII.

RAILWAY EXECUTIVE COMMITTEE FORMED.

FROM what has been stated in the previous Chapter, it will have been seen that there was put before the Government in 1911 and 1912, on behalf of the railway interests, partly by means of the "Provisioning of London" report though with still greater emphasis through the recommendations of the late General Manager of the London and North Western Railway, a complete scheme of State policy for the control and operation of British railways under war-time conditions, the bases of such scheme comprising: (1) Adoption of the Act of 1871, in preference to the Act of 1888, so that the Government would secure the advantage of having all the railways worked as a single unit, instead of being merely empowered to demand precedence for their traffic on individual railways remaining under separate control; (2) the creation of a permanent Committee of General Managers to be entrusted with the operation of the railways on their passing under State control; and (3) the further institution of a consultative body which would bring together representatives of the railways and of State departments, to the advantage of all concerned.

It was upon the general lines of this comprehensive scheme that the policy adopted by the Government was eventually based; and it may thus be said that the railway interests had, at least, shown the way out of the difficulties which had arisen.

The first of the three recommendations, as just given, was opposed to the views almost continuously held by the permanent officials since the Act of 1871 had become law. But those officials, and, with them, successive Governments and military authorities, had taken an erroneous view of section 16 of that Act. They had regarded it as impracticable, if not already obsolete, and for many years they had reposed their faith exclusively on its intended substitute, the Act of 1888. If, at last, their misapprehensions were removed, and if the superior advantages of the earlier measure—as regarded alike the best interests of the country and the efficient working of the railways—were at last recognised and accepted, that result must have been materially influenced by, even if it were not directly due to, the evidence given by the late Sir Frank Ree before the Standing Sub-Committee of the Committee of Imperial Defence.

In any case, and whether this conclusion is warranted or not, the experiences gained in connection with naval, military and other national

SIR FRANK REE

(Late General Manager, London and North Western Railway),
ACTING-CHAIRMAN OF RAILWAY EXECUTIVE COMMITTEE,
NOVEMBER, 1912–APRIL, 1914.

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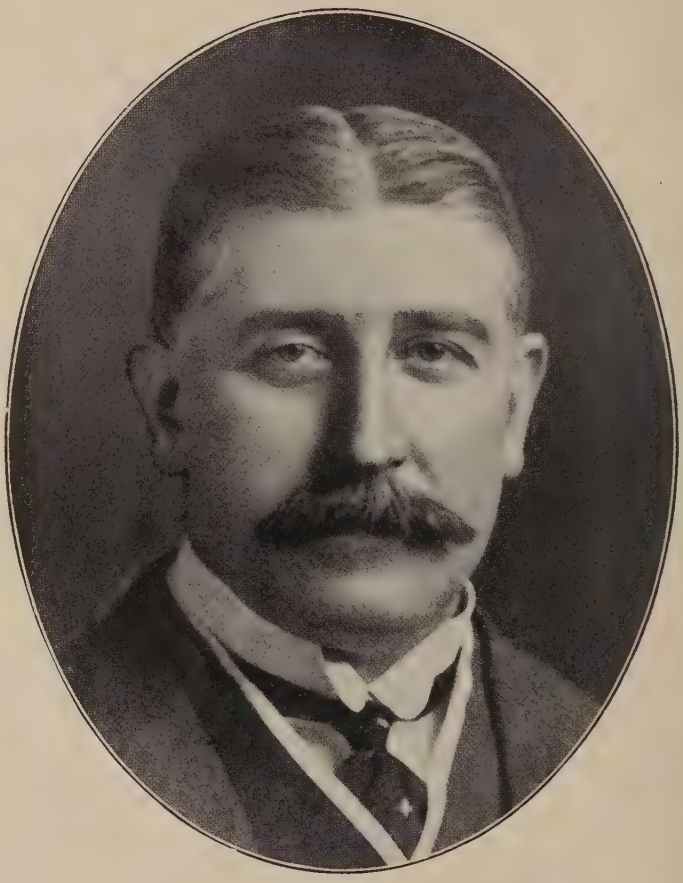

SIR HERBERT A. WALKER, K.C.B.
(General Manager, London and South Western Railway),
ACTING-CHAIRMAN OF RAILWAY EXECUTIVE COMMITTEE
FROM MAY, 1914.

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traffic during the period of the Great War of 1914-18 was to confirm in the highest degree the wisdom of the advice which the railways had given. Those experiences showed that if the Government had entered on a conflict of such stupendous magnitude with no better organisation of British railway transport for the purposes of war than a statutory authority to "order" the companies to give their traffic preferential treatment—which the companies would readily have granted without any compulsory order at all—the results would assuredly have been chaotic, if not positively disastrous.

Passing on to the second of the three recommendations—the proposed operation of the combined system of railways under State control, in war time, by a permanent Committee of Railway Managers—it was certainly a remarkable fact that, although the State had been empowered ever since 1871 to take over the railways in case of emergency, no adequate provision had yet been made for the working of them during the period they would remain under State control. According to the terms of the Act, the railways taken possession of under the warrant issued by the Secretary of State were to be made use of "in such manner as the Secretary of State may direct"; but the action to be followed in the exercise of this power was not defined, although it was clearly a matter which should be decided upon—and provided for—in time of peace instead of being left until the emergency itself arose.

There had, of course, been various suggestions as to what might be done. The Engineer and Railway Staff Corps, the War Railway Council and a Director-General of Railways had been successively proposed as offering the machinery by or through which the railways should be worked in war time; but the creation of a General Managers' Committee, as recommended by the General Managers themselves, was the course which commended itself most to the Government, and it was the one, also, now to be adopted.

In October, 1912, Sir Hubert Llewellyn Smith, Permanent Secretary of the Board of Trade, wrote to the General Managers of nine leading railway companies informing them that, on the advice of the Committee of Imperial Defence, his Majesty's Government had decided to set up an Executive Committee of General Managers to control on behalf of the Board of Trade—whose President would be the person to whom the warrant would be issued—such railways as might be taken possession of in the name of his Majesty in the event of an emergency of the nature contemplated by section 16 of the Regulation of the Forces Act, 1871, arising; and the General Managers to whom this communication was addressed were invited to meet the President at the Board of Trade on November 5th, 1912, with a view to the formation of such committee.

At this meeting Mr. Buxton, then President of the Board of Trade, explained that the Government had no intention to supersede in any way the existing management of the railways during the period of State control. They had no idea of managing the railways themselves. All they wanted was to place the State in such a position that it would be

able to give binding instructions and to require separate railways to co-operate as part of a single system. This working of the lines as one would be essential if heavy calls for naval, military and civil purposes were made on them at one and the same time, as might possibly happen. The control of the system would be vested in the proposed Executive Committee. Demands in respect to transport would continue to be dealt with by the railway officials ; but, in the event of a dislocation of traffic being threatened on account of the conflicting nature of these demands, the matter could be at once referred to the Executive Committee, which would, doubtless, be able to meet the situation by some such expedient as arranging for the traffic to go by alternative routes. In case of difficulties arising which the Executive Committee might be unable to overcome, they could appeal to the President of the Board of Trade, who would be the nominal or independent Chairman, though the committee would select one of its own members as Acting-Chairman to preside over its deliberations. Pending the advent of any such national emergency as that contemplated by the Act of 1871, the Executive Committee would, in consultation, when necessary, with the officials of the Board of Trade, make such arrangements and preparations as could be made in advance for the joint working of the railways to the best possible advantage.

Sir Frank Ree became first Acting-Chairman of the Railway Executive Committee thus formed, and it was laid down by the committee, as the result of their earliest meetings, that the main functions to be undertaken by them on mobilisation would be to co-ordinate the railway transport requirements in connection with the mobilisation of the naval and military forces and the concentration of the latter ; to ensure the transit of war material and the maintenance of the food supplies of the civil population ; to apportion the traffic in such a way as to secure the best results, and to arrange programmes with a view to avoiding any clashing of interests, reference being made to the President of the Board of Trade in the event of any inability to effect the proposed arrangements.

Within a very short time, however, of the appointment of the committee the members came to the conclusion that before they could enter fully and efficiently upon the duties with which they had been entrusted there should be some clearer definition of their own status in any general scheme of national defence. The basis on which the committee had been brought into being appeared to be that it was to be formally embodied only when war had actually broken out ; but this arrangement was regarded as likely to prove inadequate and unsatisfactory.

Attention was called to the recommendation made in the General Managers' report of August 1st, 1911, to the Under-Secretary of State for War to the effect that a permanent consultative body, consisting of representatives of certain State departments and of the railways, should be formed ; and it was also pointed out that already various separate bodies, in addition to the Executive Committee, were concerning themselves with the management, control and duties of railways in the event of any emergency of the kind contemplated by the Act of 1871. It

was thus thought desirable that the functions of the Executive Committee and their relations to such State departments as might be concerned in transport questions should be laid down more definitely; that the committee should be put in touch with the various Government departments with whom they would have to work, and that all mobilisation or other plans affecting railway transport in time of emergency, and made in advance thereof, should be drawn up either through the committee or as the result of consultations between the committee and the said departments. In other words, the Executive Committee designed to operate the railways for the Government in time of war desired that in time of peace it should have the opportunity both of studying fully the plans which might be prepared in respect to naval, military and civil traffic and of advising the Government thereon whilst avoiding any possibility of conflict between different authorities, and so be better prepared for any emergency that did arise.

A Communications Board.

Representations to this effect were made to the President of the Board of Trade early in December, 1912, and at a meeting of various Government departments held at the Board of Trade in January, 1913, under the presidency of Mr. Buxton, it was decided, as a means of carrying out the views of the Railway Executive Committee, to create a Communications Board which would be formed by a representative of each of the following Government departments: Home Office, Admiralty, War Office, and the Board of Trade, together with the members of the Railway Executive Committee, the President of the Board to be the Quartermaster-General of the Forces. In the Minute under which this new body was established it was stated that all questions to be dealt with in departments represented on the Board which had an important bearing from a railway point of view upon situations that might arise in times of emergency would be brought within the cognisance of the Board. The railway managers who in war would work the arrangements planned in peace would thus be able to supply to those departments the advice and assistance necessary to ensure that no plans were decided upon which, when the time came for putting them into operation, the Executive Committee might find unworkable. It was also stated that local arrangements for traffic would continue to be made by the naval and military authorities direct with the railway companies concerned, though the formation of the Board would secure that they were subject to general central knowledge and ultimate central control.

The formation of this new Board, which partook of the nature of a Standing Advisory Committee, meant, in effect, the endorsement and carrying out by the Government of the last of the three recommendations by the railway managers as detailed in the opening paragraph of the present Chapter.

The Board was to meet quarterly, and at such other times as might be required, in order to secure an interchange alike of views and of

information on all subjects coming within the range of its functions. It was to supersede the War Railway Council, though the Engineer and Railway Staff Corps would continue its independent existence.

Presided over by Lieut.-General Sir John Steven Cowans, K.C.B., M.V.O., who was not only Quartermaster-General but a member of the Army Council, the Communications Board had for its representatives of the said State departments officials of such high standing that, while themselves getting a prompt solution of departmental problems which had to be looked at from a railway standpoint, they were able to decide, on their own authority, most of the matters which the Railway Executive Committee, in turn, brought up for consideration. In this way a large number of questions, including many of the highest importance, were settled in advance. The meetings of the Board further rendered an invaluable service in allowing a greater insight to be obtained by the State authorities into railway possibilities and limitations, and by the railway authorities into naval and military requirements and conditions. The meetings also led to a more intimate personal acquaintance being gained by each side with the other, and this, in turn, was of much advantage.

When, on the outbreak of the war, the Railway Executive Committee necessarily came into closer and constant touch with the State departments, there was no need for a continuance of the Communications Board which had, nevertheless, by that time served a purpose of great practical utility.

Peace-Time Work of the Executive Committee.

Having, through the creation of the Communications Board, overcome the first difficulty by which they had been faced, the members of the Railway Executive Committee settled down to their preparatory work on the general lines of the programme already suggested by the Government.

In the first instance, the committee was constituted by, in addition to Sir Frank Ree, already spoken of as Acting-Chairman, the following General Managers :—Mr. (afterwards Sir Herbert A.) Walker, London and South Western ; Sir Guy Granet, Midland ; Mr. F. Potter, Great Western ; Mr. (afterwards Sir A. Kaye) Butterworth, North Eastern ; Mr. (afterwards Sir J. A. F.) Aspinall, Lancashire and Yorkshire ; Sir Sam Fay, Great Central ; Mr. Oliver R. H. Bury, Great Northern ; and Mr. Donald A. Matheson, Caledonian.

On the death of Sir Frank Ree, April 28th, 1914, Mr. H. A. Walker, who had been appointed Deputy-Acting-Chairman in November, 1913, succeeded him as Acting-Chairman. Concurrently therewith Sir Robert Turnbull, then Superintendent of the Line, was appointed General Manager of the London and North Western pending the return to England of Mr. (afterwards Sir Guy) Calthrop, then General Manager of the Buenos Ayres and Pacific Railway, who had been selected for the position of General Manager but was unable to take up his post until October, 1914, when Sir Robert Turnbull retired from the position.

He had, in the meantime, represented his company on the Railway Executive Committee.

In January, 1913, Mr. Oliver R. H. Bury ceased to be a member on his resignation of the post of General Manager of the Great Northern Railway, and the new General Manager, Mr. C. H. Dent, took Mr. Bury's place on the committee. Mr. (afterwards Sir Francis H.) Dent, General Manager of the South Eastern and Chatham Railway, was appointed by the Board of Trade an additional member on May 27th, 1913. The committee was constituted on these lines down to the outbreak of war, though until that event occurred the General Manager of the North Eastern Railway was represented at the meetings of the committee by the then Deputy-General Manager of the company, Mr. Eric C. Geddes, afterwards the Right Hon. Sir Eric Geddes, Minister of Transport for the United Kingdom.

The first Secretary of the Executive Committee, under Sir Frank Ree, was Mr. L. W. Horne, now Superintendent of the Line of the London and North Western. On the death of Sir Frank Ree and the appointment of Mr. H. A. Walker as Acting-Chairman, Mr. Horne was succeeded in the secretaryship by Mr. (afterwards Major) Gilbert S. Szlumper, Assistant to General Manager, London and South Western.

The committee adopted for their headquarters the Westminster offices of the London and North Western Railway Company, Parliament Street, S.W.; and here, prior to July 31st, 1914, they had, altogether, six meetings. Much important business was transacted, apart from the work done in association with the Communications Board and apart, also, from much that was done by the individual railway companies by arrangement with the Executive Committee and in accordance with requests made by Government departments.

One of the duties taken over from the War Railway Council had been that which appertained to the preparation and revision of mobilisation, expeditionary or other military or naval time-tables. This revision was effected in regard to all the time-tables of these types then in existence, the changes introduced by the War Office being of so drastic a nature that once more a vast amount of work was entailed upon the railway companies in the preparation, not alone of the mobilisation time-tables proper, but of working sheets adapted to them. The committee also concerned itself with making provision for any special emergency moves which might be ordered at very short notice. It had, in addition, to advise the War Office as to the practicability of its military-transport plans in general; to guarantee the arrangements necessary for carrying them into effect; to ensure the avoidance of such technical difficulties as might delay or otherwise interfere with the running of troop or other trains in strict accordance with the specified programme, and to ensure the maintenance of the food supplies of the civil population.

Then there was the question as to whether the rolling stock possessed by the railway companies could be relied upon as sufficient to meet a sudden emergency; while, subsidiary thereto, was the further question

as to the " balancing " of the running, so as to ensure that, even on the assumption of a sufficiency of rolling stock, in the aggregate, there should be no risk that moves to a particular port one day might so deplete the number of carriages available on a given line that the company concerned would be unable to carry out further moves on the following day.

In order that these especially important matters should be thoroughly investigated and provided for, the Executive Committee agreed, in November, 1913, that the Superintendents of the North Eastern, London and South Western, South Eastern and Chatham and the London and North Western (that is, the " Secretary Companies " of the Northern, Southern, Eastern and Western Commands respectively), together with the Superintendent of the Great Western, should each appoint a representative on a sub-committee which would consider the provision and the " balancing " of the rolling stock needed for the carrying out of the mobilisation programme for each separate Command. Taking the full mobilisation programme, the sub-committee calculated therefrom the approximate number of vehicles each railway company would require to satisfy the Command time-tables ; a census taken of the rolling stock owned by all the railway companies in Great Britain showed the amount which would be available, and the Executive Committee was then in a position to announce that, so far as the Command mobilisation programmes were concerned—and so far as could then be foreseen—all prospective requirements could be met.

The other question which had arisen was decided by every train included in the mobilisation programmes being duly " balanced," so that a train working to a certain destination from another part of the country (and, it might be, from another company's system) could, after a brief detention, either return or be sent in another direction for more troops or more material, as the case might be, proceeding, however, whenever possible, on this return or further journey as a loaded train rather than as a train of empties, in order that there should be as little light running as possible. All these arrangements were made without regard to differences in the ownership of the passenger coaches which would form the trains. Hence, as regards this description of rolling stock, at least (as distinct from railway wagons), the principle of a " common user " was already accepted.

One matter of detail which gave rise to much consideration was as to whether, if a Sunday intervened in the earliest days of mobilisation, the Sunday services of trains would, especially in the case of Scotland, permit of reservists reaching their depôts in time for the troop trains proceeding to the South. The Executive Committee were able to assure the War Office that, if Sunday did intervene, the companies would run an adequate train service to ensure that the reservists would be able to proceed on their way. As a matter of fact, Sunday did not intervene when mobilisation was ordered,[1] and the difficulty thus considered in advance was avoided.

[1] The 4th of August, 1914, when war was declared, was a Tuesday.

Apart from the sufficiency or otherwise of Sunday trains, instructions were issued that during the mobilisation period any man travelling on a military or a naval warrant by an ordinary as distinct from a military train, or any man in naval or military uniform not in possession of a warrant and having to pay his fare, was to take precedence of civilian passengers, even though the providing of accommodation for him might involve the turning out of one of the latter from the train.

The mobilisation time-tables even included separate sets for horses. Most of these horses were " boarded-out " horses—that is to say, animals belonging to owners who received a contribution from the Government towards their keep, and, in return, contracted to let the War Office have them when wanted. Others were animals belonging to persons who were unconscious of the fact that not only had their horses been registered on the War Office lists among those which would be " commandeered " in the event of war, but that even the trains by which they would travel had already been definitely fixed by the mobilisation time-tables.

While the Executive Committee was thus providing for the transport of other people's horses, in the event of war, the further duty devolved upon it of ensuring that the railway companies themselves might not run the risk of having so many of their own horses seized that they would be hampered in the discharge of their road-service obligations. Such risk did seem to arise when some of the companies received notice that, in case of necessity, their horses would be liable to be commandeered. As the result of representations made by the Executive Committee, the War Office issued instructions prohibiting the impressment or the compulsory acquisition of any horses owned by railway companies other than those already registered by them in the Army Horse Reserve. On the other hand the Executive Committee took steps to ensure the registration in such reserve of as many horses as the railway companies could possibly spare.

Another duty undertaken was the revision of those " Instructions to General Managers " as to the working of naval and military traffic on mobilisation of which mention has already been made on pp. 25 and 37. The first draft had, it may be remembered, assumed that, in the event of an emergency, the Government would simply enforce the Act of 1888. The later decision to take advantage of the Act of 1871 and the appointment of the Railway Executive Committee had, in combination with various other matters, brought about some material changes in the situation, and a fresh series of " Instructions " was drawn up by the War Department. These were revised by the Executive Committee in the summer of 1913, in collaboration with the Government departments and the Communications Board. Further amendments were afterwards introduced by the War Office and approved by the Executive Committee, and the final draft was completed by the end of 1913. One copy of the revised Instructions was sent to the General Manager of each railway in January, 1914; but the provisions laid down in them were not to be

communicated to other railway officers until the emergency to which they related actually arose.

The peace-time preparations of the Executive Committee further included the provision of means by which it could rely, in time of war, upon being in direct communication with the leading centres of railway administration.

At first a system of wireless telegraphy was projected, but this idea was abandoned in favour of telephone installation. Under the direction of the Government, the Post Office authorities supplemented their ordinary London and trunk line services by providing a system of private telephone wires between the Executive Committee's offices in Westminster and all the railway termini in London, together with the general offices of the Midland Railway at Derby, the North Eastern at York, and the Lancashire and Yorkshire at Manchester. Inasmuch as each centre of railway administration itself controlled a telephonic system covering the full extent of its own lines, it will be seen that the facilities afforded to the Executive Committee for communications with every part of the country were thus made exceptionally great. Thanks, again, to the Executive Committee's own telephonic exchange—placed in charge of a staff of operators supplied by the Post Office—the companies themselves were able to communicate direct and promptly with one another, at any hour of the night or day, for the purpose of arranging urgent troop movements or otherwise. Then the Executive Committee was connected by private telephone wire with the principal Government departments in London, so that in this respect, also, it was possible for urgent and confidential messages to be received or forwarded without any of the risks of delay or disclosure that might arise through their having first to pass through a central public exchange.

As it happened, this comprehensive system of telephones, which was to play a very important part indeed in the working of the organisation, was completed only the very week before the declaration of war.

CHAPTER VIII.

STATE CONTROL APPLIED.

On the declaration by the Government that "a state of war" existed between Great Britain and Germany as from 11 p.m. (London time) on August 4th, 1914, the Order provided for by Section 16 of the Regulation of the Forces Act, 1871, was duly made, and Mr. Asquith, as Secretary of State for War (a post he then held in addition to that of Prime Minister), issued a warrant empowering the President of the Board of Trade to take possession of the railways of Great Britain. Thereupon an official announcement in the following terms was sent to the Press :—

War Office, August 4th.

An Order in Council has been made under Section 16 of the Regulation of the Forces Act, 1871, declaring that it is expedient that the Government should have control over the railroads in Great Britain. This control will be exercised through an Executive Committee composed of General Managers of railways which has been formed for some time, and has prepared plans with a view to facilitating the working of these provisions of the Act.

Although the railway facilities for other than naval and military purposes may for a time be somewhat restricted, the effect of the use of the powers under this Act will be to co-ordinate the demands on the railways of the civil community with those necessary to meet the special requirements of the naval and military Authorities.

More normal conditions will, in due course, be restored, and it is hoped that the public will recognise the necessity for the special conditions, and will, in the general interest, accommodate themselves to the inconvenience involved.[1]

This notification to the public was supplemented by the following explanatory statement issued, under the same date, by Mr. H. A. Walker, Acting-Chairman of the Railway Executive Committee :—

In view of the announcement made that the Government have taken over the control of the railways, it is desirable that the public should understand exactly what this means.

The control of the railways has been taken over by the Government for the purpose of ensuring that the railways, locomotives, rolling stock, and staff shall be used as one complete unit in the best interests of the State for the movement of troops, stores and food supplies.

The necessity for this action must at once become apparent when it is realised that certain ports, through which the bulk of our food supplies enter this country,

[1] According to the Act of 1871 the warrant of the Secretary of State for War was to remain in force for one week only, but might be renewed from week to week so long as the emergency continued. An intimation was, however, given to the Railway Executive Committee by the Board of Trade that the warrant would be so renewed, and that the companies concerned might assume this to be the case until the contrary was notified.

may be closed for the purpose of such food supplies, and in that event the rolling stock, locomotives, etc., may have to be diverted to other lines for the purpose of serving other ports.

The staff on each railway will remain under the same control as heretofore, and will receive their instructions through the same channels as in the past.

On behalf of the Government, the control of the railways in Great Britain has been vested in a Committee composed of the following general managers :

Mr. D. A. Matheson	Caledonian Railway.
Sir Sam Fay	Great Central Railway.
Mr. C. H. Dent	Great Northern Railway.
Mr. F. Potter	Great Western Railway.
Sir Robt. Turnbull	L. & N.W. Railway.
Mr. J. A. F. Aspinall	L. & Y. Railway.
Mr. H. A. Walker	L. & S.W. Railway.
Sir Guy Granet	Midland Railway.
Sir A. K. Butterworth	North Eastern Railway.
Mr. F. H. Dent	S.E. & C. Railway.

The official Chairman of this Committee is the President of the Board of Trade, and the Acting-Chairman is Mr. H. A. Walker, General Manager of the London and South Western Railway.

The railway secretary to the committee is Mr. Gilbert S. Szlumper.

To the companies whose lines were taken over the following communication was addressed :—

War Office,
London, S.W.
Midnight, August 4th–5th, 1914.

Sir,—

I am commanded by the Army Council to inform you that his Majesty the King has signed an Order in Council under the Provisions of the Regulation of the Forces Act of 1871, and that your Railway, including any Railway worked by you, is taken over by the Government under that Act.

You will carry on as usual, subject to the instructions of the Executive Committee of which the President of the Board of Trade is Chairman. This Committee is located at 35, Parliament Street, S.W. Telegraphic address, Studding, Parl., London. Telephone number, Central 3127 and 3128.

Your attention is drawn to the Provisional Instructions to General Managers issued with War Office letter 79/3769 (Q.M.G. 2), dated January 28th, 1914.

I am to request you to acknowledge this communication.

I am, Sir,
Your obedient servant,
R. H. Brade.

The Secretary,
———— Railway.

The nature and the extent of the control thus assumed by the State over the railways of Great Britain were, at the outset, widely misunderstood, though it is hoped that the facts given in Chapter VII. as to the circumstances under which the Railway Executive Committee was first called into being may have helped to make the position clear.

In certain quarters it was assumed that "Government control" of the railways was equivalent to "Government administration" of them, and the success ultimately attained in the working of the lines during

the war has, by some writers in the Press, been regarded as directly attributable to such State "administration."

Here, however, there was a misconception in regard to the meaning of the word "control" as applied to the conditions which arose.

What the Government sought was no more than to ensure their command of the railway resources of the country, as far as necessary, for the "movement of troops, stores and food supplies"; and the Order made under the Act of 1871 was designed solely as a means towards this end (1) by giving the Government formal possession of the lines taken over so that they could make demands upon them and ensure the fulfilment thereof as a matter of right; and (2) by securing the operation of the lines as a single system, under one control and one administration, thus (among other things), allowing of Government traffic moving by any route and avoiding the friction, delay and conflict of interests that must have arisen under conditions of divided ownership and operation.

Provided that these advantages were secured and satisfactory financial arrangements made, the Government had no need or desire to take over—in addition to all the other duties and obligations devolving upon them in connection with the war—the actual administration of so highly technical a business as that of the railways; and their clearly-expressed intention from the outset was to leave all the working details and all the responsibilities of such administration to the Executive Committee of Railway Managers created in advance for that purpose.

One further consideration which may have contributed to the erroneous view as to the real nature of the Government control was the fact of the President of the Board of Trade being described as "Chairman" of the Railway Executive, whereas Sir Herbert Walker signed the committee's official documents as "Acting-Chairman."

This distinction in the respective titles may well have been confusing to those who did not understand wherein the difference lay; but it was, nevertheless, based on a good and sufficient reason.

The President of the Board of Trade became the official Chairman in order (1) that his authority could be invoked if trouble should arise in persuading any individual railway company to carry out the instructions of the Executive Committee; (2) that he might constitute a court of appeal in the event of any one State department making demands which, in the opinion of the committee, would interfere with the efficiency of the lines, or, alternatively, of two or more departments simultaneously presenting demands of a conflicting nature, and (3) that he should be available as an intermediary through whom, when necessary, any such conflicting demands or any matters involving questions either of national policy or of justice to the railways could be brought before the Cabinet for final decision.

From these points of view the position occupied by the President of the Board of Trade as official Chairman of the Railway Executive was one that, under any of the circumstances mentioned, was bound to be of great practical utility in the overcoming of difficulties, and his appoint-

ment to that position was an eminently wise and prudent one. All the same, the fact that he was nominally Chairman of the committee did not imply either that he presided over its meetings or that he personally took part in the administration and working of the railways placed under the Executive Committee's charge.

The technical details concerned in the carrying out of State requirements were thus left by the President of the Board of Trade, no less than by the Government, with the practical railway men best qualified to deal with them; and it is to this fact, coupled with the possibility under the Act of 1871 of working the lines as a single unit, that the success obtained in operating British railways under State-control conditions was primarily due.

If, again, the control exercised by the State over the railways as a whole was limited to the fulfilment of State requirements, that of the Executive Committee over individual companies was no less so. Apart from questions of finance, the authority of the committee as a State-constituted body was directed only to general administration for the purposes of the war. The duties to be discharged by them were, indeed, essentially and exclusively "executive." Subject to the instructions issued by the committee as representing the State, the companies were, in the words of the announcement made to them by the War Office, to "carry on as usual." So it was that the Railway Executive assumed no control over the constitution, appointment or dismissal of the individual staffs or over the management, the traffic arrangements and the other domestic arrangements of the separate companies as far as general questions and State interests did not come into consideration in connection with them.

In addition to ensuring the provision of all necessary requirements for the carrying of Government traffic, the Executive Committee had the responsibility of seeing that, so far as was possible, the needs of the civil population in regard to food supplies, trade and commerce and travel facilities generally were not prejudiced more than the exigencies of the military situation might require; and although the community may have had to make many sacrifices and to suffer much inconvenience in these directions during the course of the war, they had fewer privations to bear as the result of curtailed transport than any other of the belligerents on the Continent of Europe, at least.

There was still another set of interests for which, as railway managers, the members of the Executive Committee had to show a due regard—those, namely, of the railway investors who had provided the capital for building the lines now found indispensable to, and of such incalculable value in, the prosecution of the war, and who, even when the fullest allowance was made for the emergency which had arisen, were clearly entitled to fair treatment and reasonable consideration.

Thus the committee had three separate and distinct, if not more or less mutually conflicting interests committed to their charge; and, apart from the proportions assumed by the work to be done, the reconcilia-

tion of these interests, or, alternatively, the maintenance of such harmony between them as might in the circumstances be attainable, called for the exercise of tact and organising power under conditions and to an extent unprecedented in the history of railways if not, also, in that of the nation itself.

CHAPTER IX.

THE LINES TAKEN OVER.

It will have been noticed that in the first of the official announcements given in the previous Chapter, reference is made to the expediency of the Government having control over "the railroads in Great Britain," while the one made by the Acting-Chairman of the Executive Committee states that "the control of the railways" had been taken over by the Government. Although, however, the Order in Council conferred upon the Government the right to control the whole of the railways in Great Britain, these powers were not taken advantage of to their fullest extent. The desire of the Government was to exercise that control over only such lines as would, or might, directly or indirectly, be concerned in the transport of military, naval or other traffic of national importance in a time of emergency; and although every line that could, possibly, be included in the application of this principle was taken over, there remained forty-six in regard to which no action was taken. These lines, the aggregate mileage of which (499 miles) was equal to about two per cent. of the total mileage of railways in Great Britain, were as follows :—

Bishop's Castle.
Blackpool and Fylde Electric.
Bideford, Westward Ho! and Appledore.
Brackenhill.
Campbeltown and Machrihanish.
Chatham District.
Central London.
City and South London.
Corringham.
Corris.
Derwent Valley Light.
Felixstowe Dock and Railway.
Forcett.
Gwendraeth Valleys.
Guernsey.
Glasgow District Subway.
Glyn Valley.
Great Northern Piccadilly and Brompton.
Isle of Man.
Jersey.
Lastingham and Rosedale.
Llandilo and Lampeter.
Llanelly and Mynydd Mawr.
London Electric.
Lots Road Power.
Manchester Ship Canal and Railway.
Manx Electric.
Milford Haven Dock and Railway.
Mumbles.
North Wales Narrow Gauge.
Plymouth and Dartmoor.
Portmadoc, Beddgelert and South Snowdon.
Ravenglass and Eskdale.
Redruth and Chasewater.
Rowrah and Kelton Fell Mineral.
Saundersfoot Railway and Harbour.
Snailbeach District.
St. Austell and Pentewan Railway, Harbour and Dock.
Stocksbridge.
Swansea and Mumbles.
Talyllyn.
Underground Electric.
Watford, Edgware and London.
West Somerset Mineral.
Weston, Clevedon and Portishead Docks.
Wolverhampton and Cannock Chase.

The companies advised by the War Office that their railway had been taken over by the Government numbered 130, namely :—

Alexandra (Newport and South Wales) Docks and Railway.
Arbroath and Forfar.
Avonmouth (Light).
Axholme Joint.
Barry.
Blyton and Frodingham (Light).
Brechin and Edzell District (Light).
Brecon and Merthyr.
Bridgwater.
Brighton and Dyke.
Burry Port and Gwendreath Valley.
Caledonian.
Callander and Oban.
Cambrian.
Cardiff.
Cathcart District.
Charnwood Forest.
Cheshire Lines Committee.
Cleator and Workington Junction.
Cleobury Mortimer and Ditton Priors Light.
Cockermouth, Keswick and Penrith.
Colne Valley and Halstead.
Dearne Valley.
Didcot, Newbury and Southampton.
Dornoch Light.
Dumbarton and Balloch Joint.
Dundee and Arbroath Joint.
Easingwold.
East London.
East and West Junction.
East and West Yorkshire Union.
Easton and Church Hope (Portland).
Exeter.
Festiniog.
Forth Bridge.
Forth and Clyde Junction.
Freshwater, Yarmouth and Newport (I.W.).
Furness.
Gifford and Garvald.
Glasgow and Kilmarnock.
Glasgow and Paisley Joint.
Glasgow and South Western.
Great Central.
G.C., H. & B., & Mid. Rly. Comm.
G.C. and Mid. Joint Comm.
G.C. and North Staff. Rly. Comm.
Great Eastern.
Great Northern.
G.N. & G.E. Joint Comm.
G.N. & L. & N.W. Joint Comm.
Great North of Scotland.
Great Western.
Harborne.
Highland.
Horncastle.
Hull and Barnsley.
Humber Commercial and Dock.
Invergarry and Fort Augustus.
Isle of Wight.
Isle of Wight Central.
Kent and East Sussex.
Killin.
Kilsyth and Bonnybridge.
King's Lynn Docks and Railway.
Knott End.
Lampeter, Aberayron and Newquay (Light).
Lanarkshire and Ayrshire.
Lancashire and Yorkshire.
Lauder Light.
Leek and Manifold.
Liskeard and Looe.
Liverpool Overhead.
London, Brighton and South Coast.
London and North Western.
London and South Western.
Lynton and Barnstaple.
Manchester, South Junction and Altrincham.
Maryport and Carlisle.
Mersey.
Metropolitan.
Metropolitan District.
Midland.
Midland and Great Northern Joint.
Midland and North Eastern Joint.
Midland and South Western Junction.
Mid-Suffolk (Light).
Mold and Denbigh Junction.
Neath and Brecon.
Newburgh and North Fife.
Norfolk and Suffolk Joint.
Northampton and Banbury.
North British.
North Eastern.
North Lindsey Light.
North London.
North and South Western Junction.
North Staffordshire.
North Sunderland.
Nottingham Suburban.
Oldham, Ashton, and Guide Bridge.
Plymouth, Devonport, and S.W. Junc.

Portpatrick and Wigtownshire.
Port Talbot Railway and Docks.
Prince's Dock Joint.
Princetown.
Rhondda and Swansea Bay.
Rhymney.
Scarboro', Bridlington, and West Riding Junc.
Sheffield District.
Shropshire.
Shropshire and Montgomery (Light).
Somerset and Dorset Joint.
South Eastern and Chatham.
Southport and Cheshire Lines Extension.
South Wales Mineral.
Southwold.
South Yorkshire Joint.
South Yorkshire Junction.
Stratford-on-Avon and Midland Junction.
Taff Vale.
Teign Valley.
Vale of Glamorgan.
West London and West London Extension.
West Riding and Grimsby.
Weston, Clevedon, and Portishead (Light).
Whitechapel and Bow.
Wick and Lybster.
Wirral.
Wrexham and Ellesmere.
Yorkshire Dales.

These 130 railways, with their approximate mileage, might be classified thus :—

	Number.	Miles.
Leading Independent Railways [1]	21	19,114
Smaller ,, ,,	24	684
Joint Railways	19	909
Lines Worked by Other Companies	53	652
Electric Railways	5	90
Light ,,	8	97
Total	130	21,546

The capital value of the lines taken over was 1,200 millions. That of the lines not taken over was 42½ millions.

Allowing for small companies whose revenue and expenditure were included in the accounts of other railway companies, the number of those with whom the Railway Executive Committee had direct relations under the control system was eighty.

Length of Line and Length of Track.

The figures given above concerning the railways taken over relate to geographical miles, otherwise "length of line," and not to "length of track"—an important matter of detail in regard to which British railways do not generally get all the credit they deserve in the comparisons which international statistics make between them and railways overseas.

In England and Wales, at least, the railways have a greater proportion of second and other multiples of track than those of any other country

[1] For the purposes of the present work, and from the point of view of war-time traffic, the systems or lines which have been grouped under this heading are: Caledonian, Cambrian, Furness, Glasgow and South Western, Great Central, Great Eastern, Great North of Scotland, Great Northern, Great Western, Highland, Hull and Barnsley, Lancashire and Yorkshire, London and North Western, London and South Western, London, Brighton and South Coast, Midland, North British, North Eastern, North Staffordshire, South Eastern and Chatham, and Taff Vale.

in the world. The proportion of single track to length of line is, in fact, only 33 per cent. in England and Wales, as compared with 59 per cent. in Scotland, 80 per cent. in Ireland, 57 per cent. in France, 57·4 per cent. in Prussia (State Railways) and 61·7 per cent. in Germany (entire system). In England there are to be found up to twenty-two separate tracks of railway laid side by side; yet a mile of such railway, when owned by a single company, counts as no more than one mile in respect to "length of line." On this basis a mile of the perfect net-work of lines at Crewe, for example, is equivalent to no more than a mile of single-track line in the most sparsely-populated district of any country overseas.

The equivalent in "length of track" of the railways (running lines) of Great Britain (exclusive of Ireland) at the end of 1913 was 36,499 miles of single track. If to this we add length of sidings, also reduced to single track, namely, 14,256 miles, we have a total of 50,755 miles of railway track which, save for the comparatively short mileage of lines not taken over, came under Government control as from midnight on August 4th, 1914.

Significance of the Smaller Lines.

That the Government should have assumed control over the great trunk lines and other leading or important railway systems (to be dealt with more fully, in regard to their position and individual achievements, in a later part of the present work) will be regarded as only a natural consequence of the emergency which arose. There may, nevertheless, be some degree of wonder in the mind of the non-railway reader as to why it was necessary, in the interests of the national welfare, and for the prosecution of The World's Greatest War, that the Government should take over, in addition, so large a number of small, if not apparently insignificant, railways. No fewer, in fact, than sixty of those on the list given on pp. 55–6 have a length of line not exceeding fifteen miles each. Twenty-one others have a length of line ranging from sixteen miles to thirty miles. In some instances the reasons for the inclusion of certain lines—as, for example, the Easingwold (Yorks.), which, though joining the North Eastern at Alne, is owned by an independent company, has a total length of 2 miles 37 chains, possessed in 1913 one (tank) engine and four passenger coaches, and had in that year a total net income of £482—are certainly difficult to assign; but many of the smaller lines had a degree of significance in no way to be judged of from their actual length, while an examination of their circumstances and conditions brings to light many interesting facts concerning the British railway system in general and the useful purpose it was able to serve under war-time conditions.

A considerable proportion of the small railways included in the list form, for all practical purposes, integral portions of some main-line system, and are leased to or worked by the trunk-line company as part of that system. They had, therefore, necessarily to be acquired along

with the lines of which they constitute an essential link ; though, inasmuch as they are owned by companies having a separate financial entity, the taking of them over involved the application to them of the same machinery as in the case of the great trunk lines themselves. Even when small lines of this type might not be actually required for the purposes of Government traffic, the exclusion of them from the list of those controlled might have led to undesirable complications either in working or in the accounts of the company by which they are operated.

In the same way many of the smaller lines worked by their own companies as independent railways have their traffic relations so closely associated with those of larger companies, either as links thereof or as feeders thereto, that, whether they were really required by the State or not (and there was always the possibility that many of them might serve a useful purpose as alternative routes), they could not be left out of any scheme affecting the railways in general.

Like considerations apply to most of the joint railways belonging to two or more companies and having, from a traffic standpoint, a value in the judging of which their length was quite a secondary matter ; while they, also, under the conditions of their ownership, had to be treated by the Government as separate and distinct entities.

Other of the smaller railways had an intrinsic importance of their own, apart from any association they might have with larger systems. A few examples may be of interest.

The *Sheffield District Railway*, owned by an independent company, but worked by the Great Central, has a length of only five miles ; but it connects the chief industrial area of Sheffield with the Great Central and the Midland and it rendered invaluable service as a means of transport for guns and munitions produced in and around Sheffield.

The *Easton and Church Hope* (Portland), three miles long, worked jointly by the Great Western and London and South Western, is a line which continues the rail communication from Portland along the east coast of Portland Island, turns inland to the quarries and convict prison at Easton, and is of strategical importance from its nearness to the harbour of refuge formed by the breakwater in Portland Road.

The *North Lindsey Light Railway* (eleven miles), worked by the Great Central, runs out from that company's Frodingham station, in North Lincolnshire, serves an important ironstone district, and skirts, for some of its distance, the southern banks of the Humber. The continued distribution of iron ore and pig iron from this district to manufacturing centres in Scotland and South Wales in the interests, more especially, of the production of war material, became a matter of paramount importance during the war. The value of the North Lindsey line was especially marked when the interference with navigation on the east coast diverted to the railways so much of the mineral traffic which had previously been carried by sea.

Many of the smaller English or Welsh railways depended for their special significance, from a national standpoint, mainly on the extent

of their coal and mineral traffic, as the following examples, giving figures for 1913, will suggest :—

Railway.	Coal.	Other Minerals.
	Tons.	Tons.
Alexandra (Newport and South Wales) Docks and Railway	5,943,000	691,000
Barry	11,220,000	116,000
Brecon and Merthyr Tydfil[1]	3,422,000	277,000
Cleator and Workington Jct.	636,000	947,000
Dearne Valley	1,991,000	40,000
East and West Yorkshire Union	589,000	82,000
Festiniog	4,000	83,000
Furness	1,314,000	2,525,000
Neath and Brecon	1,375,000	97,000
Rhymney	7,425,000	757,000
Taff Vale	19,392,000	524,000

In Scotland, the *Wick and Lybster* (fourteen miles) and the *Dornoch* (eight miles) are light railways which, independently owned but worked by the Highland Railway Company, were originally built to further the interests of a group of fishing villages, the former in Caithness and the latter in Sutherlandshire. Each was constructed with the help of a subsidy from the Government, which made a grant of £25,000 to the Wick and Lybster and one of £14,945 to the Dornoch. In neither instance was there any suggestion that the line had been designed to serve strategical purposes, or that the Treasury grant was made from this point of view ; but, apart from their financial relations with the Highland, one may assume that, in the event of any German landing having been attempted along the stretches of the Scottish coast they serve, these modest little light railways might have been of great importance in the movements of a defensive force.

The *Arbroath and Forfar* (fifteen miles), which belongs to an independent company but is leased to the Caledonian, is an important link in the Caledonian system and one that rendered useful service from the outbreak of the war. In addition to ordinary traffic, cloth for naval and military purposes, tarpaulins, tent cloth, ship stores, and jute and flax fabrics in general were carried in increased quantities. Large bodies of troops were stationed and trained in the district, and not only were there considerable movements of troops, but various new traffics were developed in respect to all kinds of Army equipment, guns, horses, hay, straw, etc.

The *Brechin and Edzell*, a line, six miles long, off the Caledonian

[1] The Brecon and Merthyr line was also to become a link in an alternative chain of rail communication for the conveyance of Admiralty coal between South Wales and the naval bases in Scotland at a time when the more direct route was getting a greater amount of traffic than it could carry.

Brechin branch, afforded transport facilities for a camping centre where large bodies of troops were stationed, special train arrangements having to be made for the conveyance of men, horses and Army equipment of all kinds. The traffic in textiles for naval and military use underwent a considerable increase.

The *Dumbarton and Balloch* (five miles), owned jointly by the Caledonian and the North British, connects Loch Lomond with the railway system south thereof. Along it was conveyed a considerable traffic in shell forgings and finished shells produced in the district.

The *Dundee and Arbroath* (twenty-three miles) was constructed by an independent company in 1836 and 1837. It is now jointly owned by the Caledonian and the North British, and forms an integral part of the coast route between Perth and Aberdeen. With the advent of war, many new industries for the production of military requirements were started in the district. The line also served the Barry and Buddon camping grounds, situate midway between Dundee and Arbroath.

The *Glasgow and Kilmarnock* (twenty-three miles) jointly owned by the Caledonian and Glasgow and South Western, both of which run trains over it, forms part of the G. & S.W. Coy.'s through route to Carlisle, over which Midland trains run from and to England.

The *Glasgow and Paisley* (thirteen miles), jointly owned by the same two companies, is the route by which Greenock and other places on the West Coast of Scotland are reached. The establishment of National Projectile Factories in the district it serves brought the line a heavy traffic in military necessaries.

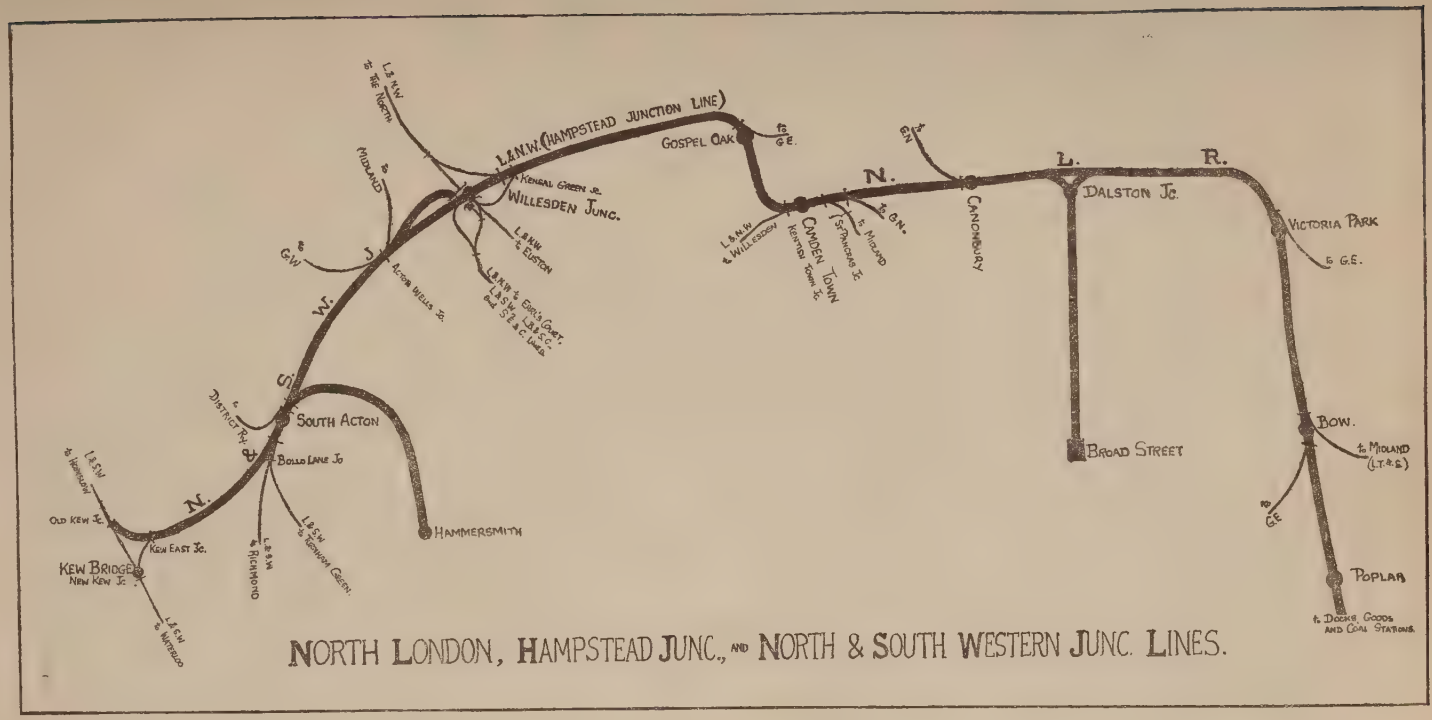
The *Killin Railway* (five miles), owned by a separate company, but worked by the Caledonian, connects the Callander and Oban with Loch Tay. It was found especially useful for the dispatch of pit-timber to the south, owing to the scarcity of foreign supplies.

So one sees how even the smallest of British railways, taken over by the State, did their share in providing the means of transport on which the success of our arms and the maintenance of the economic life of the nation so largely depended.

Across-London Lines.

Certain short railways or sections of railways in London—whether joint lines, lines belonging to independent companies, or lines forming distinctive portions of trunk systems—afforded connections of much practical advantage between main-line railways north and south, or west and east, of London, the passing of through traffic across the Metropolis being thus greatly facilitated. It is, indeed, essential to a right understanding of the transport situation in regard to the movement of naval and military traffic in this country throughout the whole period of the war that the nature of the physical connections between the northern and southern lines, more especially, should be made clear.

The *North London Railway*—which was constructed in 1846 and has a length of fourteen miles—is practically a continuation of the London and



NORTH LONDON, HAMPSTEAD JUNC., AND NORTH & SOUTH WESTERN JUNC. LINES.

North Western alike from its Hampstead Junction section, from Chalk Farm, and from the L. & N.W. Camden Goods Depôt, viâ Bow and Poplar, to the West India Docks, at Blackwall, with a branch at Dalston to the City (Broad Street Station). It has physical connections at St. Pancras Junction (North of St. Pancras Station) with the Midland and the Great Northern ; at Canonbury Junction with the Great Northern Company's suburban branches and the main line at Finsbury Park, and, at Victoria Park, with the Great Eastern, thus allowing of through traffic passing from the L. & N.W., the Midland and the Great Northern systems on to the Great Eastern, which itself serves the East India and the Victoria and Royal Albert Docks. At Bow the North London joins the London, Tilbury and Southend section of the Midland on the east side and has a junction with the Fenchurch Street branch of the Great Eastern line on the west side.

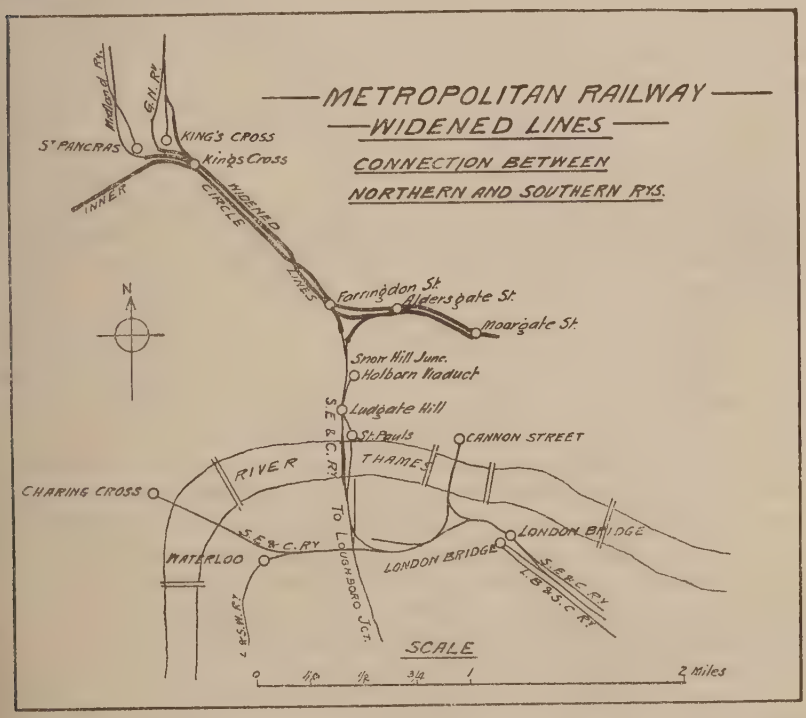
This already wide scope of its usefulness is further considerably increased by the fact that at Kentish Town Junction, a little to the west of its Camden Town Station, the North London joins with the Hampstead Junction line of the London and North Western, traffic from the Great Eastern, Great Northern and Tilbury lines being thus enabled to pass viâ this line and the North and South Western Junction Railway on to the systems of the Great Western and the London and South Western, or vice versâ.

So the North London constitutes, not only a connecting link, but a whole net-work of links between different railways, north, east, and west of the Metropolis, both as regards the railways themselves and each and all of them and the docks of East London in general. Needless to say, the war-transport demands made on this small but vitally important system were little short of prodigious. Between the many military camps on the London and South Western, the South Eastern and Chatham, the London, Brighton and South Coast and the Great Western on the one side, and the long range of important coastal points on the Great Eastern on the other, an almost continuous stream of troop traffic passed viâ Willesden, the North London Railway, and Stratford. In the opposite direction an enormous number of troops, whether British, from the Eastern Counties, or Americans, brought on from the London Docks by the Great Eastern or from the Tilbury Docks by the Midland (L.T. and S. Section), travelled over the North London to Willesden, and then, continuing viâ the North and South Western Junction Railway, passed on to the Great Western at Acton, the London and South Western at Gunnersbury, *en route* for Southampton or elsewhere on that system, or, travelling viâ Kensington (Addison Road), joined the South Eastern and Chatham Railway for Dover, Folkestone, etc., or the London, Brighton and South Coast for Crowborough, Newhaven, etc.

From the date of the declaration of war until the signing of the Armistice no fewer than 7,359 loaded trains with troop or other military traffic passed over the North London and North and South Western Junction lines ; but in order fully to appreciate the extent of the demand

made upon the railways, it must be borne in mind that the stock forming these military specials was, in most cases, returned empty to that company's system from which the traffic emanated. Taking both loaded and empty trains the total number passing by the route in question during the period mentioned was 13,565.

In the early days of the war the passenger-train services on the North London had, occasionally, to be entirely suspended in order to facilitate the passing of troop traffic. On several days during August, September and November, 1914, the ordinary passenger-train services were either considerably curtailed or entirely suspended. The longest single period



for which certain of the stations were continuously closed to the public was from 6 p.m. on Monday, November 16th, 1914, until midnight on November 18th. During this time 177 special troop trains and an equal number of empty trains went over the line.

The *North and South Western Junction Railway*, referred to above, is only five miles in length, but is a most useful line. Constructed in 1851, it formed a link between the London and South Western Railway, near Kew, and the London and North Western, at Willesden. Subsequently it got a connection at South Acton with the Richmond Extension of the London and South Western, while junctions at Acton Wells allowed of an exchange of traffic with the Great Western and the Midland. Having regard, also,

to its further connection with the Great Eastern, viâ the North London, one sees that this diminutive little railway provided a direct and important means of communication between the Western Counties, the Eastern Counties, the Midlands and the North. In 1871 the line was leased in perpetuity to the London and North Western, the Midland and the North London Railway Companies jointly.

Another of the most important of these across-London links—and one which dates back to the '60's—is that known as the "*Widened Lines*" *of the Metropolitan Railway*. These lines, starting from King's Cross, are connected there with the Great Northern and the Midland Companies' systems, and terminate, for the purposes of London traffic, at Moorgate Street; but a short connection with the South Eastern and Chatham Company's system is given at Farringdon Street, thus enabling the two northern companies to run trains direct on to the South Eastern and Chatham, and, also, after passing over that company's line, to reach the London, Brighton and South Coast system viâ London Bridge and Croydon, viâ Herne Hill and Tulse Hill or viâ Loughboro' Junction, Wandsworth Road and Battersea Yard, and, also, the London and South Western system viâ Loughboro' Junction, Wandsworth Road, Longhedge Junction and Clapham, or viâ Herne Hill, Tulse Hill and Wimbledon.

During the course of the war this "Widened Lines" route assumed a rôle of great importance from the point of view of through railway communications, the more so as the bulk of the naval and military traffic was required to travel between North and South. A vast amount of traffic, alike in personnel and in material, was, in fact, carried over the said lines. The number of troop trains dealt with between the outbreak of war and February 25th, 1915—as told by Lord Aberconway, Chairman of the Metropolitan, at the meeting of that company on the last-mentioned date—was no fewer than 2,738. During the first fortnight in 1915 the number of goods trains taken over the "Widened Lines" was 2,935, or an average of 210 per day, apart from special military trains for troops or stores and the ordinary local passenger services. In goods traffic alone there was an increase of 120 per cent.

The tonnage of goods carried and the number of through military specials, for personnel or material, run over the "Widened Lines" between the northern and the southern railways from August 5th, 1914, to December 31st, 1918, were as follows:—

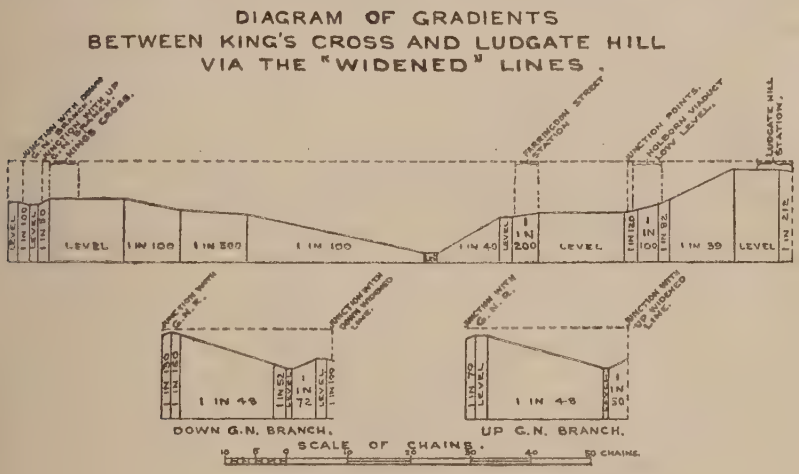
Period.	Goods.	Specials.
August 5th to December 31st, 1914	20,328 tons	1,986
1915	55,556 ,,	6,044
1916	54,991 ,,	5,814
1917	58,295 ,,	5,934
1918	58,902 ,,	6,269
Totals	248,072 tons	26,047

Certain physical conditions there were, however, which affected the use

of the "Widened Lines" route and imposed restrictions on the nature and extent of the traffic that could pass over it.

The route in question consists of an up and a down underground line so constructed that, from King's Cross to a point immediately before entering Farringdon Street yard, they are on the north-east side of the Metropolitan Company's system proper. Just north of Farringdon Street the lines dip underneath the Metropolitan Company's system, and then come up again on the same level on the west side into Farringdon Street Station, where the connection with the South Eastern and Chatham Company's system is made.

This dip has to be taken into account in connection with traffic between North and South, while for a distance of about a quarter of a mile



GRADIENTS OF THE WIDENED LINES.
(Showing the "Dip" under the Metropolitan Inner Circle Lines.)

from Holborn Viaduct Low Level Station (formerly Snow Hill) to Ludgate Hill there is a rise of 1 in 39 to allow of the trains passing from underground to overground. This is the case inasmuch as the rails in Ludgate Hill Station are about 25 ft. above New Bridge Street so as to permit of the main lines of the South Eastern and Chatham Company at this point being on the same level as the railway bridge crossing the Thames at Blackfriars.

It naturally followed that this gradient was one of the determining factors as to the amount of traffic that could be got over the "Widened Lines" between North and South.

As regards munitions, goods and coal traffic, the route was physically incapable of dealing with all the traffic offering. Special measures were accordingly taken to increase its capacity both by practically cancelling, for the duration of the war, all passenger traffic over the Metropolitan system into or out of Moorgate Street Station except between the hours of 8 to 10 a.m. and 5 to 7 p.m., and by "banking"—i.e., using a supple-

mentary engine for—the freight trains, the average load of which was thus increased from sixteen to twenty-five wagons.

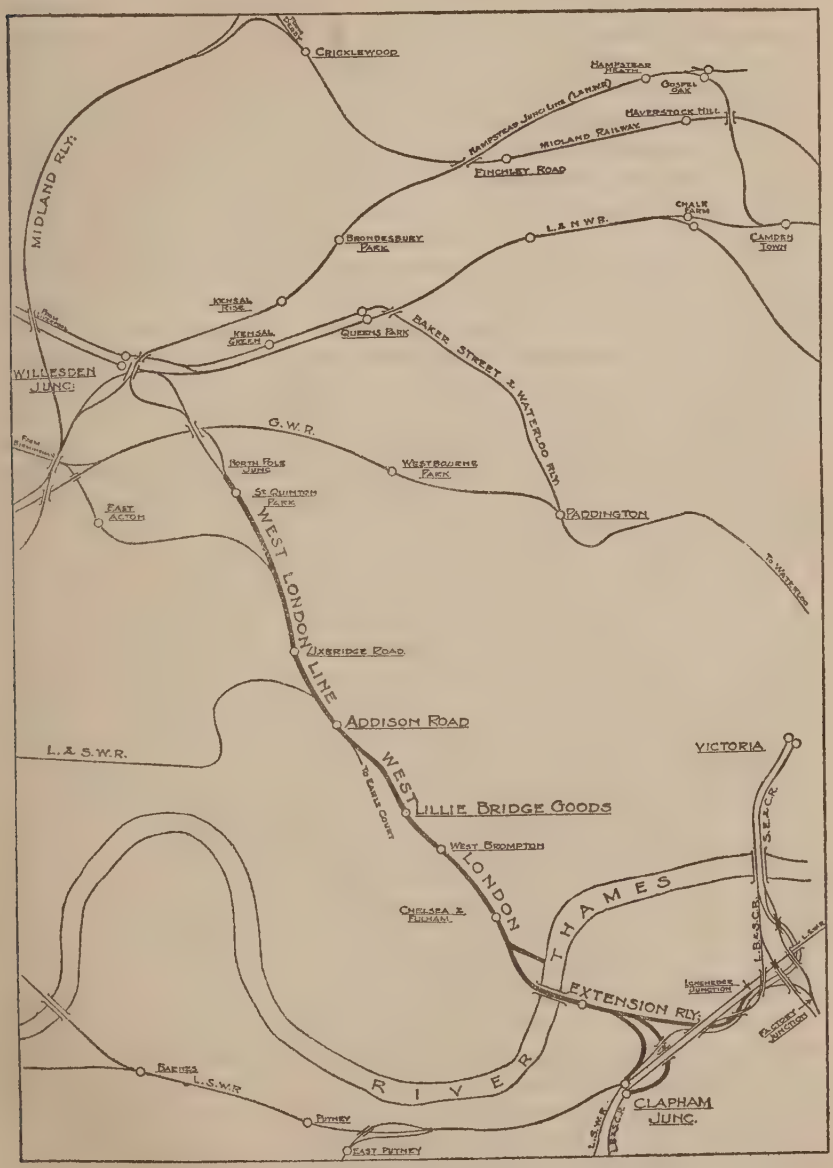
In the case of traffic from South to North, in addition to the need for the provision of ample brake power on account of the heavy down gradients, the greatest difficulty was experienced on leaving King's Cross (Metropolitan) for the Great Northern Company's system. In this case the connection is made by a one-line tunnel, and in a distance of about thirty-two chains there is a gradient of 1 in 48, with a particularly sharp curve of about seven chains radius. It was not possible to use a "banker" in the rear for trains travelling over this short section, as the assistant-engine, before returning to the "Widened Lines," would have had to cross over the whole of the busy lines of the Great Northern Company's main line terminus station. Neither was it practicable to double-head the trains on account of the danger of the enginemen on the second engine being asphyxiated by smoke and fumes owing to the small gauge of the single-line tunnel.

Restrictions were also imposed on the use of the "Widened Lines" on account of the limitation of the loading-gauge. The dimensions of certain vehicles, such as ambulance cars and wagons conveying goods traffic of exceptional width and height, necessitated other routes having to be found for this class of traffic, though measures directed to the improvement of the loading gauge were taken during the course of the war.

One route which, situate on the outer edge of London rather than going actually across it, afforded considerable relief to the "Widened Lines" of the Metropolitan Railway, in addition to carrying a great volume of war traffic on its own account, was formed by the *West London* and the *West London Extension Railways*. These two short lines constitute a link with almost the very earliest days of railway history.

In 1836 a company was incorporated to construct what was then called "The Birmingham, Bristol and Thames Junction Railway"—a designation changed a year or two later to the shorter and more appropriate one of "The West London Railway." The powers obtained were for the building of nine and a half miles of railway which would connect the London and Birmingham Railway (the forerunner of the London and North Western) and the Great Western with the western districts of London. The first section constructed joined the Great Western at Wormwood Scrubs (North Pole Junction), and did not go beyond Shepherd's Bush. Only a single line of rails was then laid, and in or about 1840 experiments were made thereon with a view to testing the system of working railways by atmospheric tubes; but this idea soon had to be abandoned. By 1844 a connection with the London and Birmingham line had been established on the north, at what is now Willesden Junction, while on the south the West London continued to a point near West Kensington where it connected with the Kensington Canal, the acquisition of which by the company for a sum of £36,000 gave communication, by barge, with the Thames, and brought in a small revenue. In 1854 the West London was vested in the London and North Western and the Great

Western and came under the management of a joint committee representing those two companies.



WEST LONDON AND WEST LONDON EXTENSION RAILWAYS.

Four years later the London and North Western, the Great Western, the London and South Western and the London, Brighton and South Coast combined to form a new company for the building of a West London

Extension Railway, a little over four miles in length. From a junction with the West London at Addison Road, the West London Extension utilised the bed of the Kensington Canal, except where it gave direct access to the Thames ; it crossed the Thames at Chelsea and, at Battersea, linked up with the Victoria Station and Pimlico Company. It established connections with the main-line systems of the London and South Western and the London, Brighton and South Coast Companies, and, among other facilities, gave direct access to traffic from the Great Western and the London and North Western into the London, Chatham and Dover and London, Brighton and South Coast Stations at Victoria.

The original West London Railway was used exclusively for goods traffic until 1859, when it was doubled and made available for passenger traffic. As at first constructed the line had, also, crossed the Great Western on the level at Wormwood Scrubs, passing thence under the Grand Junction Canal ; but in 1860 it was carried over the Great Western by a bridge, the connection, however, at North Pole Junction still remaining.

Down to the war this dual line on the fringe of London was not used for passenger traffic—whether through traffic or suburban—to anything like the same extent as London railways in general. Under war conditions it served purposes of great utility.

The West London route was the standard route for traffic passing from the London and North Western and the Great Western on to the systems of two of the southern companies, namely, the London, Brighton and South Coast, viâ Lillie Bridge, and the South Eastern and Chatham, viâ Longhedge Junction (though the Great Western had an alternative route, viâ Reading, to the South Eastern and Chatham), and a great amount of traffic did so pass, not alone to districts on the west of London or south of the Thames, but to such ports as Portsmouth, Newhaven, Folkestone, Dover, Chatham, Sheerness and, also, to the train ferry at Richborough.

Much heavy troop traffic between the Eastern Counties and points on the South Eastern and Chatham and the London, Brighton and South Coast systems travelled viâ Stratford (Great Eastern), passed on to the North London at Victoria Park, thence went viâ Willesden to the West London line, and was so taken on, viâ Addison Road, until the connections with the southern lines were made.

Then, also, the West London was of really great service as an alternative route for heavy or out-of-gauge traffic—such as coal trains for the South Eastern lines, and ambulance trains—which, for reasons already stated, could not pass over the " Widened Lines " of the Metropolitan Railway. Great Northern trains, leaving that system at Canonbury or at St. Pancras Junction, went viâ the North London and the North Western to Willesden, joined the West London, gained access therefrom to the South Eastern or the Brighton systems, and so continued, if necessary, to any of the ports mentioned. Traffic from the Midland Railway could be dealt with in the same way. The South Eastern and Chatham had no running powers over the West London, but the owning

companies conceded to it, on the outbreak of war, the same privileges in regard to the passing of trains over this route as they themselves had.

Traffic diverted from the "Widened Lines" formed, however, a comparatively small proportion of the sum total of that which passed over the West London, and as the stream of stores carried by the London and North Western and the Great Western for dispatch to the Western Front from Newhaven, Littlehampton, and Richborough greatly increased (following on the development of shipment facilities at those ports), it soon became impracticable to deal with the whole of it at the recognised exchange points, which, without some help, would have become hopelessly congested.

Thus it was that through trains from the London and North Western and the Great Western ran, with the engines of those companies, to points on the Brighton or the South Eastern systems—such as Three Bridges, Redhill, Plumstead, Erith, etc.—which were far beyond the usual points of exchange. Engines from the southern lines also worked through to more distant exchange points in the reverse direction.

It was over the West London that there was dispatched daily to Richborough from the large munition factory at Hayes an ammunition train which was so heavy that the South Eastern and Chatham Company, who worked the traffic throughout, had, owing to the gradient on this connecting link, to send two engines to haul the train. To Lillie Bridge Goods Station, on the West London, the Great Western and the North Western brought large numbers of wagons laden with military stores of all kinds, general service wagons, gun limbers, tents, oil, wheelbarrows—everything, in fact, wanted by an army in the Field. At Lillie Bridge these wagons, coming direct or indirect from all parts of the country, were made up into a regular service of stores trains to be worked therefrom by London, Brighton and South Coast engines to Newhaven or Littlehampton, So great, in fact, were the volumes of ammunition, stores and other Government traffic passing that down to the end of 1918 it was found necessary to keep the box and sidings at Lillie Bridge continuously open from 6 a.m. on Mondays to 6 p.m. on Sundays.

In the months of April, July and October in 1917 and 1918 respectively the number of "up" ammunition and regularly-booked Government stores trains passing by the West London route to southern ports or other destinations on the London, Brighton and South Coast or the South Eastern and Chatham were :—

	Ammunition Trains.		Govt. Stores Trains.	
Month.	1917.	1918.	1917.	1918.
April	119	134 ..	63	93
July	155	179 ..	82	67
October	149	204 ..	69	69
Total . .	423	517.	214	229

These figures show a grand total of 1,383 "up" specials (apart from

trains of returned empties) for the periods stated, or an average of 230 per month.

Of troop trains there passed in the years 1917 (figures for earlier years are not available), 1918 and 1919 :—

Year.	North to South.		South to North.	
	Loaded.	*Empty.*	*Loaded.*	*Empty.*
1917	347	47	65	322
1918	428	210	269	408
1919	672	1,001	1,035	515
Total	1,447	1,258	1,369	1,245

This gives a total of 5,319 troop specials for the three years—an average of 147 per month.

How extensively this route was used for ambulance trains may be shown thus, though the figures are not quite complete, no record being available for one month in 1917 :—

Year.	North to South.		South to North.	
	Loaded.	*Empty.*	*Loaded.*	*Empty.*
1917	8	811	864	3
1918	118	880	990	35
1919	4	222	251	4
Total	130	1,913	2,105	42

With evidence such as this before one, the great value of the services rendered by the West London route—notwithstanding that its two separately-owned lines make such a very small contribution to the total mileage of British railways—is beyond all possibility of dispute.

The *East London Railway*, constructed under an Act passed in 1865, was designed to connect lines north and south of the Thames by means of the Thames Tunnel.

Seven miles in length, the East London is leased by no fewer than six companies—the Great Eastern, the Metropolitan, the Metropolitan District, the London, Brighton and South Coast, the South Eastern and the London, Chatham and Dover. It is worked concurrently by two—the Metropolitan and the Great Eastern. South of the Thames it has a junction with the London, Brighton and South Coast and the South Eastern at New Cross. Proceeding northwards, it passes Surrey Docks Station, in the vicinity of the Surrey Commercial Docks, dips under the Thames by means of the Thames Tunnel, emerges at Wapping in the vicinity of the London Docks, connects with the Metropolitan and Metropolitan District by a junction near the London Hospital, Whitechapel, and finally joins the Great Eastern at Shoreditch. In addition to affording through connections between all these different lines, as well as giving the dock communications mentioned, the East London provides rail facilities for the districts of New Cross, Deptford, Rotherhithe, Wapping, St. George's-in-the-East, Whitechapel, Bethnal Green, Bishopsgate and Shoreditch.

The number of military trains proceeding by this route from Liverpool Street to the South Eastern and Chatham and the London, Brighton and South Coast systems was at times so large during the first days of the war that the line had to be closed entirely to all ordinary traffic. Owing to the heavy gradient due to the dip beneath the Thames, trains going

through the tunnel have to be restricted to fifteen or sixteen coaches, and, as troop trains generally had thirty or more vehicles, it was found more convenient, in the later stages of the war, to send these from the Great Eastern to the southern lines by the North London–West London route instead of taking them into Liverpool Street Station there to be divided into two trains for separate dispatch ; though, in addition to the Metropolitan traffic to and from New Cross, the East London continued to be

much used throughout the war for munition and other goods traffic for Newhaven, Richborough and elsewhere.

A great number of ambulance trains also passed this way from the South Eastern and Chatham to the Great Eastern system, sheltering in the Thames Tunnel whenever enemy air-raids were proceeding over London. The number of loaded ambulance trains so passing in the years from 1915 to 1919 inclusive was :—1915 : 194 ; 1916 : 248 ; 1917 : 254 ;

GRADIENTS OF THE EAST LONDON RAILWAY.
(Showing the "Dip" under the Thames.)

1918 : 278 ; 1919 : 28, a total of 1,002, with a corresponding number of return trains conveying train crew only.

Cross-Country Travel.

Striking as these links and physical connections of railways within or bordering upon the Metropolitan area may well appear to be, they are only typical of those to be found on the railways of Great Britain in general.

For many years past it had been the policy of practically all the leading companies to secure the provision alike of alternative routes and of facilities for a direct interchange of traffic with neighbouring lines. These advantages have been secured either by the provision of junctions or through a continuation of one company's lines by those of another. When the systems concerned have been some distance apart, the con-

nection has been obtained by the construction of either a branch, a joint or an independent line. In this way the possibility of making cross-country journeys, or even of journeys from one end of the Kingdom to the other, by routes avoiding London, without change of carriage, was increased, while on the outbreak of war the improvements which had thus been introduced—in the interests of the civil community and of the railway companies themselves—combined to offer some very great advantages in the handling of Government traffic.

A good example of these conditions is afforded by the Banbury branch of the Great Central—a nine-mile link which, opened in 1902, connects the Great Central at Woodford and Hinton with the Great Western at Banbury. Thanks to this short branch, trains from Southampton passing on to the Great Western from the London and South Western, at Basingstoke, can join the Great Central at Banbury and continue on that company's system, viâ Leicester, Nottingham and Sheffield, to Mexboro'. Thence they can proceed over the Swinton and Knottingley Joint line (Midland and North Eastern) to Knottingley, where a connection with the North Eastern allows of an extension of this through service to York, Darlington, Newcastle and Scotland. Save for a slight bend towards the east between Banbury and Woodford, the rail communication is in almost a straight line from Southampton to Newcastle-on-Tyne.

By this route great numbers of troops travelled from the North to Southampton or were moved from Winchester or Salisbury Plain north or east ; and by it, also, ambulance trains conveyed sick and wounded on through journeys from Southampton to the Midlands, the North of England and various destinations in Scotland.

Another important benefit derived from the Banbury-Woodford branch was that of facilitating the transport of coal for the Fleet from the South Wales coal-fields viâ the Great Western, the Great Central, the North Eastern and the East Coast Route to Scotland. In a single week between ninety and one hundred coal trains made the journey to the North by this route.

Another important cross-country route was offered by the Cambridge Branch of the London and North Western. Connecting with the Great Western at Oxford, it continued in an almost direct line viâ Bletchley and Sandy (where the North Western has a connection with the Great Northern Railway) to Cambridge, linking up there with the Great Eastern. Thus, with the Great Western at one end of the branch and the Great Eastern at the other, the transfer of traffic between the Western Counties and the Eastern Counties was greatly facilitated, and much war-traffic, more especially in regard to the movement of troops, did so pass.

At Bushbury Junction, on the outskirts of Wolverhampton, there is another physical connection between the London and North Western and the Great Western. Prior to August, 1914, only very little exchange of traffic occurred at this point ; but war-time conditions led to Bushbury becoming a junction of considerable importance from a rail-transport

point of view. Western Counties' traffic brought to Bushbury by the Great Western was there handed over to the London and North Western for conveyance, if necessary, viâ Crewe and Huddersfield to Leeds, where it could be transferred to the North Eastern for delivery at any station on that company's line.

As a further illustration of the utility of existing junctions for working military traffic, mention might be made of one at Neasden, on the North-West of London, which, while actually connecting the Midland with the Great Central, indirectly allowed of an interchange of war traffic between the Eastern Counties, viâ the Great Eastern, and the wide extent of country served by or reached from the Great Central. Traffic from the Great Eastern, passing over the Tottenham and Hampstead Junction Joint Line to the Midland, was worked thereon viâ Cricklewood and Dudding Hill to Neasden Junction, on the Midland Branch to Harlesden and Acton Wells. As, however, this junction does not lie in the direction of traffic emanating from the Tottenham and Hampstead Joint Line, it was necessary to provide a special engine which, connected with the rear of Great Eastern trains taken just beyond the junction, could draw them from the Midland branch along the Great Central curve on to the main line of that system to the North.

Many other examples could be given; but those here mentioned may serve to indicate the nature and the great utility of that system of intercommunication between the different railways which had been adopted in the pre-war days solely for the purposes of ordinary commercial traffic, yet forming a valuable transport asset when the country went to war.

The principle of establishing physical connections between the various railway systems had, indeed, been carried out to such an extent that, so far as can be ascertained, the construction of only four new junctions was found necessary on the outbreak of the war, and these were put in at the request of the military authorities for strategical reasons—otherwise, for use in an emergency which did not arise. One of the four was a double junction at Gospel Oak, between the Hampstead Junction Railway of the London and North Western Company and the Tottenham and Hampstead Junction Railway, owned jointly by the Midland and the Great Eastern. This gave an alternative route for military traffic between the London and North Western system, the Great Eastern system and the Midland Company's Tilbury and Southend line. The second instance was a new link, about 700 yards in length, between Whetstone, a station situate on the Great Central main line a few miles south of Leicester, and Blaby, on the London and North Western Company's Nuneaton and Wigston Junction ("South Leicester") branch, establishing communication, at Whetstone Junction, between the Great Central and the Midland systems. Then, also, at the request of the War Office, a junction was constructed by the Midland and the Great Northern Companies between their lines at Peterborough, to serve emergency purposes in case of need. No use was made of it in this

connection, and, not being wanted for ordinary commercial traffic, it was removed at the end of the war. Finally, a single junction was laid in between the Tottenham and Hampstead Junction Railway, near Crouch Hill Station and the Great Northern Line at Harringay—once more for emergency purposes which did not arise.

Concurrently with the provision of connecting links between different railway systems, individual railways had done much to improve their own lines by cutting off detours and securing shorter or alternative routes. Mention might, for instance, be made of what was done on the Great Western Railway a few years ago in connection with the South Wales and Bristol direct line, the Stert and Westbury line, and the Langport and Castle Cary line. Thanks to these improvements, Government traffic in war-time got, by the first-mentioned, a quicker and alternative route between London and Bristol, and, by the second and third, improved transport between London and Plymouth.

As regards alternative routes in general, these are offered by British railways alike between the chief centres of population and between these centres and ports or other places on the coast. The running, under peace-time conditions of so many different services by a variety of different routes between the same terminal points—such as London and Manchester, Exeter or Scotland—had led to the principle of company-ownership of railways, as practised in this country, being made the subject of much adverse criticism; though the critics did not always remember that apparently competing services may provide for the needs of intermediate places as well as for those of the termini, and do not necessarily compete except as regards non-stop expresses. In any case, the existence of these alternative routes was an enormous gain to the Government in, for instance, moving simultaneously large bodies of men or large quantities of supplies or munitions for transport under more or less urgent conditions between North and South.

British Railways a National System.

Thus it was that, on the outbreak of war, the railways of Great Britain were to be regarded as constituting for all practical purposes, and apart from certain exceptions (such as tubes, underground railways and narrow-gauge lines), a national system in so far as they permitted of rolling stock passing from the lines of any one company on to those of any other between Penzance and Thurso.

It is true that, while this was rendered possible by uniformity of gauge in respect to width of lines, lack of a corresponding uniformity in loading-gauge, owing to varying dimensions of tunnels, bridges, etc., on different lines, made it necessary, at times, that certain traffic—and especially traffic coming under the denomination of "exceptional loads"—should be sent by a longer instead of by the shortest route. This, however, was not often a matter of any great consequence, the more so as the longer route might still be the quicker route when lines already more or less congested with traffic could be avoided, while the working of all the controlled

railways as a single unit disposed at once of any question as to divided ownership.

The final result, also, of these various phases of railway policy was that when the State took over the railways in a time of national emergency, the general conditions were such that, notwithstanding any shortcomings in the principles and practice of private enterprise, and notwithstanding that the railways of this country had never been designed, as those of Germany, and (since 1870–71) those of France, had largely been, to serve strategical purposes, the various lines, branches, links and connections had been so planned, were so complete in themselves, and had been so well constructed, that it became *physically possible* for one hundred and thirty railways, separately owned, to be operated forthwith as a unified system. In other words, not only could Government traffic be moved in any direction and by the most convenient route—subject to the considerations in respect to loading gauge suggested above—but rolling stock could be transferred from lines where little or no Government traffic was being carried to others where this traffic was exceptionally heavy and extra locomotives or wagons were needed.

Von Moltke was of opinion that " from a military point of view every railway is welcome, and two are still more welcome than one "—the more so since, as he told the Prussian Herrenhaus in 1879, " although we may not want to make use of every railway line that has been constructed, we may still want to make use of the whole of the rolling stock that is available." The truth of this saying was to be verified no less in Great Britain than in Germany. But in order that the whole of the rolling stock may be so made use of in time of war there must needs be physical connections between the various railway systems ; and in our own country these physical connections had been made, not by the Government, in the interests of strategical movements, but by commercial companies for the purposes of ordinary commercial transport, yet offering practically the same defensive and strategical advantages as if they had been specially designed therefor.

Ready !

So, when the Great Crisis came, the British railway companies were ready for it, not only in respect to peace-time preparation of plans and programmes for a national emergency whenever it might occur, but in the organisation and equipment of transport systems equal to the meeting of all requirements in the dispatch forthwith, overseas, of an Expeditionary Force with a smoothness and a success at once so complete and so emphatic.

New Works.

While all *immediate* requirements could thus be met, the railways were not to be regarded as being at once equal, without any change or adaptation whatever, to all the requirements arising in connection with so tremendous a conflict as the World-War of 1914–1918.

Even in peace time it had been foreseen that much would have to be done, in time of war, to enable the railways fully to serve military purposes, and reference to p. 12 will show that one of the duties assigned to the Army Railway Council, originally created in 1896, was "to confer with the different railway companies as to the need for and the provision of extra sidings, loading ramps, barriers, etc., at any of the stations." These additional facilities, it was realised, would certainly be needed in connection with troop movements, etc., though it was not considered necessary to provide them in advance of any occasion that might arise for their use, since they were not wanted for the commercial working of the lines.

All the same, the peace-time measures adopted for meeting possible contingencies included consultations between military authorities and responsible railway officers at stations where the additional facilities in question would, or might, be required when an emergency arose; and these consultations were followed by the preparation of such plans, or the making of such arrangements, that, on the advent of an emergency, a start could be made with the provision of the extra facilities immediately an order for them was given. There was, also, an assured certainty that most of the works thus provided for would be ready in ample time for the movements in respect to which they were wanted.

No one, however, could anticipate that we should have to engage on a World-War that would convert us into "A Nation in Arms"; change the country into a vast workshop for the production of munitions of war; lead to the setting up of innumerable camps, depôts and war-establishments of all kinds; involve the raising of army after army for dispatch overseas; cause the diversion to the railways of such great volumes of coasting traffic, and, in these and other ways, increase the sum total of our rail transport to such an extent that the task of dealing with it, under all the conditions which arose, would attain to almost insurmountable proportions.

Nor was it only the increased traffic on their own lines for which the railway companies had to provide—though this in itself was a big enough undertaking. The aggregate cost of the other work they did, mainly in the direction of supplying additional transport facilities for Government departments or for private firms engaged on Government contracts, amounted to millions of pounds. In the case of one company alone the total estimated cost of works of the type in question which had been carried out on Government account down to the end of December, 1918, was, approximately, £1,030,000.

It was in respect to the provision of new or extended sidings that the greatest demands were made upon the activities of the railway companies in the said direction. Sidings, often on an extensive scale, were wanted in connection with munition factories, munition depôts, ammunition dumps, harbours, docks, dockyards, shipyards, aerodromes, aircraft depôts, storage depôts, inspection stores, mine stores, clothing stores, hay stores, imported-iron-ore stores, military camp railways, prisoner-of-war camps, electricity works, engine sheds, etc.; and they were called for to a very

considerable extent by the Ministry of Munitions in the case of steelworks and other industrial establishments engaged in the manufacture of munitions and requiring, perhaps, to carry out extensions of the works with a view to providing for possibly enormous expansion in output. Sidings constructed for the Ministry by the Caledonian Railway Company in connection with three steelworks in the Glasgow district cost £44,000, £76,000 and £119,000 respectively. Additional marshalling sidings had to be provided on the North Eastern system for dealing with Scotch traffic by the East Coast route ; increased accommodation was found necessary in South Wales in handling the Admiralty coal traffic, and special sidings were needed by railways in various parts of the country for the timber, the stone and the coal-for-London traffics.

Of additions to companies' lines, the most important was the widening, on Ministry of Munitions' account and at a cost of £60,000, of the line between Rockville and Floriston, on the system of the Caledonian Railway Company near Carlisle, such widening having become essential to the effective handling of the abnormal, if not the prodigious, amount of traffic—war traffic swollen by diversion-from-sea-to-rail traffic—at one time passing by the West Coast Route between Scotland and England. Other new constructions carried out by the companies for Government Departments included new loop or branch lines between main lines and ammunition factories, military camps, etc. ; the establishing of connections with lines of this type which had been laid down by contractors, and the provision of additional cross-over roads to sidings and in certain stations in order that, when one train was being unloaded there, another could pass around it by going temporarily on the adjoining line. Additional passing-places on single-track lines were also arranged. Intermediate signal boxes were put in for the purpose of shortening block sections, thus increasing the capacity of the lines ; much extra-signalling work and the lighting of new lines and sidings were undertaken, and footbridges over level crossings, rivers or streams, in the neighbourhood of factories, etc., were constructed. In this last-mentioned connection special reference might be made to a temporary footbridge which, at a cost to the War Office of £583, the London, Brighton and South Coast Company provided in order that the sick and wounded soldiers in King's College Hospital, Denmark Hill, S.E., could gain direct access to Ruskin Park.

Much of the work done at railway stations in the lengthening of platforms to facilitate the loading or the unloading of troop trains, or in the provision of further water supplies, of loading wharves, of horse-loading platforms, and so on, was all according to peace-time plan ; but a good deal had to be done in addition. The setting up of munition works or Government establishments, often in out-of-the-way places where no great amount of traffic had previously passed, involved the extension to comparatively great lengths of platforms at country stations for the accommodation of the great numbers of workpeople travelling by the special trains run day by day from and to the towns within convenient reach. When no existing station served the purpose, halts or temporary

EXTENSION OF UP-PLATFORM AT CHELMSFORD (G.E.R.).
(Sleeper Dock carried over Rail Connection between Up-Main Line and Up-Siding).

TEMPORARY LOADING DOCK AT THURSTON (G.E.R.).

NEW WORKS FOR WAR TRAFFIC.

To face page 78.

A WAR CROWD AT CODFORD, WILTS (G.W.R.).

(The above photographs, reproduced from the *Great Western Railway Magazine*, convey some idea of the remarkable changes brought about at country stations which, constructed to serve only a small amount of local traffic under normal conditions, were called upon to provide for crowds of war-time workers who not only filled up the platforms, making the shelters there look rather grotesque, but even overflowed on to the railway lines. The men seen in the photographs were employed on the erection of huts for various military camps in the neighbourhood, and they are shown awaiting the arrival of a workmen's train. They represent, too, only a part of those for whom daily transport facilities had to be provided at the same station.).

To face page 79.

platforms were provided for the workmen's trains. In one or two instances special platforms were arranged for ambulance trains in order that these could be unloaded at stations without interruption of other traffic.

Still another feature of the works which certain of the railways had to carry out was that of providing new roads to stations, camps, munition factories, or otherwise, in order that heavy cartage traffic could pass along them. In the winter of 1914–15, more especially, the roads in the neighbourhood of some of the camps were so deep in mud that they were scarcely passable for vehicles at all. These conditions were met to a great extent by the provision of branch or light railways.

The need for carrying out all these new works under the abnormal conditions which arose does not in any way prejudice the before-mentioned fact that, although created by private enterprise to serve commercial purposes, the British railways could be taken over by the Government as "a going concern" for all the immediate purposes of war.

State Control of Irish Railways.

The reader may have noticed that the Order in Council made on August 4th, 1914, under section 16 of the Regulation of the Forces Act, 1871, authorised the Government to take control over "the railroads in *Great Britain*," those in Ireland not being included within the scope of the Order. The policy adopted in England led, however, to certain developments in the position of Irish railways and Irish railwaymen which, by the end of 1916, made it expedient that the whole position in regard to the Sister Isle should be reconsidered.

A detailed account of the war-work of the Irish railways cannot be undertaken here; but the fact may be mentioned that one result of excluding those lines from State control in the first instance was to withhold from them the assistance which the railways in Great Britain received from the Government in paying to their employés the war bonuses, or in making the additions to wages, which had become inevitable owing to the increased cost of living. The Irish companies in general had done what they could in this direction; but they had themselves been heavily hit by the increased cost of operation, more especially in regard to the cost of coal, and they could not offer to their staffs higher bonuses than from two to four shillings a week, while several of the companies whose shareholders were receiving no dividends whatever could not afford to make any further allowances at all to their staffs.

These conditions compared very unfavourably with the war bonus of ten shillings a week then being paid to railwaymen in England, and even to English railwaymen doing in Ireland the same work as Irish railwaymen receiving the lower scales of pay. Much dissatisfaction arose in consequence.

Appeals were made to the Government in the autumn of 1916 to afford some degree of State aid to the Irish railways either by taking them over and placing them on the same footing as the English and Scottish lines or in some other way; but no definite course was then adopted. Some

approach to a crisis was reached in November of the same year when the Chief Secretary for Ireland, acting under the authority of the Defence of the Realm Regulations—and, also, no doubt, under instructions from the Government—intimated to the Irish railway companies that excursion and other special train facilities in Ireland which were not necessary to the national interest should be generally discontinued for the duration of the war. The taking of this action would, as was pointed out at the time, stop the running of excursion trains to the numerous and largely-attended football matches held under the rules of the Gaelic Athletic Association, the final matches in which generally brought to Dublin about 40,000 people from all parts of Ireland. The discontinuance of all such traffic as this might be desirable in the national interests; but, incidentally, the railway companies would lose about a quarter of a million in traffic receipts and be still less able to pay to their employés the war bonuses to which the latter considered they were entitled. It was, the railwaymen protested, unfair for the Government to impose on the Irish companies conditions involving a curtailment of traffic without conceding advantages, in the way of recouping them, similar to those they had given to English and Scottish companies.

By way of emphasising this protest, the engine-drivers and firemen on the Great Southern and Western handed in notices, on December 14th, 1916, that unless by the following Sunday night they were granted a war bonus of ten shillings a week, or an increase in their wages of six shillings a week, they would at once cease work. It was understood that upon the result of the action thus taken by the Great Southern and Western men would depend the course likely to be followed by Irish railway employés in general.

Three days later a report was published in the Press that Mr. John Redmond had been informed by the President of the Board of Trade that the Government had decided to take over the Irish railways in the same way as in the case of the English railways. This news was confirmed by an official statement issued in Dublin as follows:—

> The Government having decided to take possession of the Irish railways under the Regulation of the Forces Act, 1871, the Great Southern and Western Railway locomotive men who had given in their notices have withdrawn them, and the men will be received by the Board of Trade next week.

The claims which the men had then put forward were satisfied on the basis of an all-round increase of seven shillings a week, and the Government and the railway companies were thereupon free to proceed with the settlement of the conditions which the passing of the Irish lines under State control would involve.

These conditions corresponded generally with those that had been adopted in Great Britain. The railways taken over, with a guarantee of their net receipts of 1913, were—the Belfast and County Down; the Cork, Blackrock and Passage; the Dublin and South Eastern; the Great Northern of Ireland; the Great Southern and Western; the Londonderry and Lough Swilly; the Midland and Great Western of

Ireland; the Midland (Northern Counties Committee) and twenty-two others.

An Irish Railway Executive Committee was formed, and the British Railway Executive Committee appointed a sub-committee of its own members to deal with questions mutually affecting the two committees.

The course subsequently followed in Ireland in regard to such matters as regulation of goods traffic, travel restrictions, wages, etc., was practically the same as that followed in England; though, in respect to wages, it might be pointed out that, as Irish railwaymen, starting on what was mostly a lower level, received substantially the same advances as railwaymen in England and Scotland, the former derived therefrom a greater degree of relative advantage, while the controlled Irish railways were, for the time being, left with a proportionately greater cause for uneasiness in regard to their own financial position if, on the cessation of the control period, they should revert to their former conditions subject to the handicap which the increased wages would represent.

CHAPTER X.

RAILWAY EXECUTIVE: METHODS OF WORKING.

THE immediate effect on the British Railway Executive Committee of the application of State control to the railways was that what had hitherto been meetings at intervals of three or four months were suddenly transformed into a practically permanent session. The mobilisation plans had, as a matter of prudence and policy, been so well prepared in advance that each and every Command throughout the land had its own mobilisation time-table, showing the unit to be moved; brigade and division of which it formed part; exact composition of the unit in officers, other ranks, baggage, guns, horses, etc.; station of entrainment and detrainment; departure and arrival times of the trains; route by which the trains would travel; day on which the move was to be made (i.e., so many days after "the first day of mobilisation"); and make-up of the trains in first and third-class compartments, cattle wagons, carriage trucks, etc. In these directions, therefore, it only remained for the responsible authorities to say when the railway companies were to bring the time-tables into force and set in motion the machinery thus ready to start.

There were, however, various questions still undecided, and among them were several which concerned the exact nature of the relations, under State control, between the Government and the railway companies, more especially in regard to financial arrangements. The earliest possible settlement of this particular subject was, for various reasons, extremely desirable, and a number of meetings were held by the Executive Committee, in the earliest days of the war, for the furtherance of the negotiations. There was, also, a wide range of matters of detail—such as the allowance to be made by the railway companies to wives and families of reservists and Territorials called out and the instructions to be given in regard to the preparation of railway accounts—which called for early settlement, while, most important of all, at the moment, there were the possibilities of calls for emergency moves of troops.

So it was that within two days of the declaration of war the Executive Committee decided to hold, until further notice, formal meetings every day at 10 a.m., 2 p.m., 6 p.m., and 9.15 p.m., when questions of policy would be discussed, the Acting-Chairman being authorised to call special meetings, to deal with emergency matters, at any hour of the day or night. Taking into account, in addition, all that had to be done

between the meetings in the way of detail work, interviews, etc., this meant both for the committee and for the staff a working day of anything up to twenty hours. Nor were the members of the committee free even when they left the offices. A notice paper on the door of the committee room announced that on leaving they were to indicate where a message would reach them if they were wanted before the time fixed for the next meeting.

On August 24th—the twentieth day of the war—it was arranged that meetings of the full committee should be held twice instead of four times a day—namely, at 10.30 a.m. and 5 p.m. From September 29th, 1914, the full meetings were held three times a week until January 8th, 1915, when it was agreed that thenceforward there should be a meeting of the whole committee once a week, with informal or special meetings as required.

The reduction in the number of meetings did not mean that there was any decrease in the amount of work to be done. The volume of that work underwent, rather, a steady and continuous expansion. What happened was that, as practical organisers, the General Managers forming the Executive Committee did not attempt the impossible feat of doing everything themselves but adopted a system of devolution under which, while retaining full authority and responsibility in their own hands, they devoted their attention mainly to matters of principle and questions of policy, referring particular subjects, special inquiries and technical or working details to individual members or groups of members, or, alternatively, to one or other of various types of sub-committees, "for consideration and report," this being done, however, on the strict understanding that all minutes, proceedings and recommendations were to be approved by a full meeting of the Executive Committee (with a reference to the President of the Board of Trade in case of need) before any action was taken thereon. In this way the Executive Committee was relieved of a vast amount of detail work; the new and often highly complex questions constantly arising were dealt with under the best conditions, while the Executive Committee itself kept in close touch with everything that was done and was able to ensure continuity in the lines of policy followed.

Devolution, Co-ordination, Co-operation.

Resort to this devolution system was rendered easier and more effective for two reasons.

In the first place, the General Managers forming the Executive Committee represented the leading railway companies of Great Britain, and, apart from any arrangements as to proceedings, inquiries, interviews, etc., which they could make among themselves, they had at their command the staffs of their united companies, included therein being the greatest experts, specialists and authorities on railway working and kindred matters to be found in the country. Thus the formation of any particular group of railway officers into a sub-committee to undertake, report upon, or otherwise deal with some technical or other subject with

the details of which they would be better acquainted than anyone else was a mere matter of passing an Executive Committee resolution and of authorising, perhaps, one company or one railway officer to "take the initiative."

In the next place, the close relations between the Railway Executive Committee and State Departments permitted the formation of joint committees on which those departments and the railway companies were alike represented—an arrangement often of great advantage whether in enabling each side to become better acquainted with the needs, conditions or limitations of the other, in overcoming difficulties which had arisen, or in securing the provision of improved traffic facilities. It was, in fact, the adoption throughout of this further principle of co-ordination and co-operation, by bringing together, for the purposes of mutual consultation and joint action, representatives of all the interests concerned in particular questions, that contributed in so material a degree to the successful working of the whole system. In every instance in which these joint committees were appointed a solution of the problem satisfactory to all concerned was invariably reached.

The sub-committees were divided into three groups, constituted as follows: (A) Sub-committees of the Executive Committee, formed exclusively by members of that body; (B) joint sub-committees, composed of (i.) members of the Executive and other railway officers in combination; (ii.) railway officers, presided over by a member of the Executive; (iii.) members of the Executive, railway officers and representatives of Government Departments; or (iv.) railway officers in association with Government-Department representatives; and (C) departmental sub-committees formed of railway officers not members of the Executive Committee. These various sub-committees might, in turn, be sub-divided into standing sub-committees, appointed to deal generally, for the duration of the control period if necessary, with some particular phase of railway working; and occasional sub-committees, dealing specifically with subjects which did not call for treatment beyond a certain period.

The following list of standing sub-committees, as appointed at the end of 1916 for the year 1917, will show more clearly how the system operated; though the list does not include either the sub-committees which, having served their purpose, had ceased to exist, or the "occasional" ones formed from time to time throughout the year:—

(A) Sub-Committees of Railway Executive Committee:
- (1) Committee for dealing with questions affecting the Admiralty.
- (2) Comforts for railway troops.
- (3) Control of Irish railways (liaison officers).
- (4) Belgian Railways Refugee Sub-Committee.

(B) Joint Committees:
- (5) Committee for dealing with matters of accountancy.
- (6) Railway war manufactures.
- (7) Ambulance trains for the Continent.
- (8) Committee for dealing with emergency moves in case of invasion.

(9) Enlistment of railwaymen.
(10) Committee for dealing with sleepers and timber required by railway companies.
(11) Control of Government and contractors' traffic—supply of wagons.

(C) Departmental Committees:

(12) Sub-Committee of Accountants.
(13) Sub-Committee of Goods Managers.
(14) Sub-Committee of Superintendents.
(15) Standing Sub-Committee for dealing with the conveyance of explosives.

Concerning the constitution of the joint committees on the above list, the fact may be mentioned that they consisted—(5) of two members of the Executive Committee and the Accountants of six railway companies; (6) of three members of the Executive Committee, Locomotive Superintendents and other officers from twelve railway companies and representatives of the War Office, the Admiralty and the Ministry of Munitions; (7) of two members of the Executive Committee and the Carriage and Wagon Superintendents of lines concerned; (8) of five members of the Executive Committee and the Superintendents of thirteen companies; (9) of four representatives of the Executive Committee and three representatives of the War Office; (10) of two members of the Executive Committee and the Chief Engineer of the South Eastern and Chatham Railway, and (11) of officers from nine railway companies and representatives of the War Office, Admiralty and Ministry of Munitions. Five of these sub-committees—(6), (7), (9), (10) and (11)—each had a railwayman as secretary.

As regards Departmental Committees, (12), (13) and (14) consisted of officers on the staffs of companies represented on the Executive Committee and (15) of Goods Managers, Superintendents and Chemists of six companies.

By the end of 1917 the number of sub-committees, in the same three groups, appointed for 1918 had increased to twenty-four, some of the earlier ones having been dropped out of the list while others had been added according as new questions arose or fresh developments occurred. The increase was especially marked in the case of Departmental Committees, the number of these being now eleven. Further changes in the list for 1919 still left the total at twenty-three.

Apart from formally-appointed committees, it was a matter of frequent occurrence for (say) three or four members of the Executive Committee, or heads of departments of three or four companies, to be asked to go into the details of some particular question or communication and lay before the full committee for their consideration a report thereon or the draft of a reply thereto, the subject often being disposed of at a single sitting. Then there were numerous meetings or conferences between members of the Executive Committee, or responsible railway officers delegated by them, and representatives of Government Departments. Such meetings were most helpful in ensuring harmony between possibly conflicting interests, in facilitating settlement of difficulties, in solving

traffic problems and in helping to meet new requirements. Still further the Executive Committee complied with many invitations extended to them to appoint representatives on Government or Departmental Committees which might have to deal in one way or another with transport questions.

The extra work that service on the sub-committees entailed on a large number of railway officers who were not nominally on the staff of the Executive at all, and who still had their ordinary duties to attend to for their own companies, was in many instances enormous. It often meant labours which were not only continuous throughout the day, but were carried on far into the night under conditions of great pressure if not of intense strain. Such officers had, also, to be ever ready to start off at the shortest notice for any part of England, Wales, or Scotland where some conference was to be held or some inquiry made into local traffic conditions or other matters.

To the Railway Executive Committee the value of the help thus afforded must have been almost incalculable, while the facts stated may enable the reader to understand more clearly how it was that so small a body as the Railway Executive Committee, even though it had been appointed for the discharge of no more than executive functions, was able to accomplish so apparently overwhelming a volume of work and acquit itself of so very many exceedingly onerous responsibilities as those that fell to its lot.

Minutes and Communications.

One must, nevertheless, still remember that everything done by sub-committees, conferences or delegations had to be reported to and formally approved, modified or rejected by the Executive; and this in itself, apart from much more that had to be done, involved a vast amount of work. During the full period of the Executive Committee's existence, that is to say, down to the time when its functions ceased at the end of 1919, the number of minutes it had passed was 5,515, and the records of its proceedings—including therein the reports received from the various sub-committees, deputations, etc., on which a large proportion of those minutes had been based—extended to no fewer than thirty-four bulky volumes of typed foolscap. In many instances the reports presented on a single occasion by an exceptionally hard-working sub-committee, such as that of the Goods Managers of Companies Represented on the Executive, extended to fifty pages, or even more.

Communications respecting agreements with the Government; decisions arrived at by the Executive Committee; directions in regard to traffic working; statistical information required, and a great variety of other subjects or matters of detai arising out of the operation of the lines as a single unit and affecting the controlled companies as a whole, were made to those companies in the form of what were at first known as "Instructions," "Circular Letters" being substituted after some 300 had been sisued under the former designation. In this way, also, the controlled

companies were kept generally in touch with what the Executive was doing. Each communication consisted of one or more sheets of typewritten foolscap, and—often accompanied by copies of agreements made or of reports drawn up, specimens of vouchers, warrants or special labels to be used, public notices to be displayed, forms to be filled up, and other important papers or documents—bore the signature either of the Acting Chairman or the Secretary of the Executive Committee and was addressed to the General Manager of the company, to be dealt with in the department of that officer as occasion required.

The number of "Instructions" and "Circular Letters" issued down to December 31st, 1919, was 2,047. These occupy another thirty-one volumes, making a total of sixty-five foolscap volumes in which details as to the work done by the Railway Executive Committee and its sub-committees are to be sought; though the perusal and the assimilation—more or less—of the contents of these substantial records is only an initial step towards giving a fairly comprehensive outline of what the British Railways did in the Great War, there being much more, not so recorded, that is only to be learnt of through personal inquiry among individual companies, State officials or in other directions.

Circulation of general communications among all controlled companies was supplemented by an immense correspondence on an extremely wide range of subjects, among those that claimed the greatest degree of attention in this respect being, for example, the enlistment of railwaymen. An enormous amount of work was also done, alike with controlled companies and with the War Office, the Admiralty, the Ministry of Munitions, and other State departments, over the telephone. Not only were there telephones in every room but there was one alongside each and every clerk for his own particular use, and the aggregate number of messages sent or received per day must have run into many hundreds.

Constitution.

When the railways were taken over by the State the Chairman, as President of the Board of Trade, was Mr. Walter Runciman. He was succeeded successively in December, 1916, by Sir Albert H. Stanley, M.P., and in May, 1919, by Sir Auckland Geddes, who was the last President of the Board of Trade to deal with railways, the functions of the Board in respect thereto being transferred in August, 1919, to the Minister of Transport. Sir Albert Stanley was created a Peer, and took the title of Lord Ashfield, in January, 1920.

Apart from the official Chairman, the Committee consisted, on August 4th, 1914, of ten General Managers of railway companies, namely, Mr. H. A. Walker (Acting-Chairman), Mr. D. A. Matheson, Sir Sam Fay, Mr. C. H. Dent, Mr. F. Potter, Sir Robert Turnbull, Mr. J. A. F. Aspinall, Sir Guy Granet, Sir A. K. Butterworth and Mr. F. H. Dent. Mr. Walker received the honour of knighthood January 1st, 1915, and two years later was created K.C.B. On August 7th, 1914, Mr. William Forbes, General Manager of the London, Brighton and South Coast Railway, was added to

the committee. The honour of knighthood was conferred upon him in 1915. Mr. H. W. Thornton, General Manager of the Great Eastern Railway, had been invited by the committee in January, 1915, to attend its full meetings and such of its emergency meetings as he wished to be present at, and in February, 1916, he was formally appointed a member by the President of the Board of Trade, the constitution of the committee being thus increased to twelve. Mr. Thornton was appointed Honorary Lieutenant-Colonel of the Engineer and Railway Corps on January 1st, 1917; became in the same year Deputy-Director-General of Movements and Railways, with the rank of Brigadier-General; was created in 1918 a Knight of the British Empire, and, early in 1919, went to Paris for some time as representative of the Director-General of Movements and Railways in France. He was created an "Officier de l'Ordre de Léopold" by the King of the Belgians.

Sir Sam Fay was, in January, 1917, appointed to the control of military and munition movements in Great Britain in connection with the Department of Military Railways. In March, 1918, he was made Director-General of Movements and Railways, with a seat on the Army Council. Following on these appointments, he necessarily became a less regular attendant at the meetings of the Railway Executive Committee, and he was represented there from time to time by members of the Great Central Staff.

Mr. F. Potter died on July 23rd, 1919. Mr. C. Aldington was appointed General Manager of the Great Western Railway in his place and became a member of the Railway Executive Committee in September, 1919.

Sir Robert Turnbull was General Manager of the London and North Western Railway when war was declared. In October, 1914, Mr. Guy Calthrop took over the position of General Manager of the company, and, by virtue of that position, succeeded Sir Robert Turnbull as a member of the Executive Committee. Sir Robert's services were, however, retained by the committee, and he again represented the London and North Western Railway thereon when, on February 15th, 1917, Mr. Calthrop was appointed Controller of Coal Mines. The L. & N.W. Railway thereupon made Mr. I. T. Williams Acting-General Manager. Mr. Calthrop was created a Baronet in 1918. He died in February, 1919, and was succeeded as General Manager of the L. & N.W. Railway by Mr. Williams, who, on the invitation of the President of the Board of Trade, became a member of the Railway Executive Committee in April, 1919, and received the honour of knighthood in the same year. Sir Robert Turnbull then proposed to withdraw from the committee, but consented to remain on as an unattached member, and he continued so to act until the end of September, 1919.

Mr. J. A. F. Aspinall, General Manager of the Lancashire and Yorkshire Railway, was, on the outbreak of hostilities, spending a holiday in Germany, and he was detained there as a prisoner of war from August 17th to September 21st. During this period he was represented on the Railway Executive Committee by Mr. A. Watson, Superintendent of the Line

on the Lancashire and Yorkshire, and though, on regaining his freedom, Mr. Aspinall joined the committee, Mr. Watson's services had been found of so much value that, with the consent of the Board of Trade, they were retained, Mr. Watson continuing to do the work of a member, although not formally appointed as such. Mr. Aspinall was knighted in 1917. On his retirement in February, 1919, from the position of General Manager of the Lancashire and Yorkshire he was succeeded alike in that capacity and as representative of the company on the Railway Executive Committee by Mr. Watson, who was created C.B.E. in 1917.

On the appointment of Sir Guy Granet to the positions successively of Controller of Imports (March, 1916), Deputy-Director-General of Military Railways (October, 1916), and Director-General of Movements and Railways, with a seat on the Army Council (March, 1917), the Midland Railway was represented on the Executive Committee by Mr. F. Tatlow (now C.B.E.), Deputy-General-Manager of the company, as an *ex-officio* member. Sir Guy Granet retired from the Midland in January, 1919. Mr. Tatlow became General Manager in his stead, and was then officially appointed a member of the Railway Executive.

With one exception all the members of the Railway Executive Committee were members of the Engineer and Railway Staff Corps, and, having regard to this fact and to the extent of the powers conferred on the former, there was now less scope for the activities of the latter as a collective body, though nearly every officer of the Corps was specially identified with one phase or other of work connected with the war. In October, 1914, at the request of the War Office a committee of the Corps was formed to deal with the organisation of civil labour in and around London in the event of an emergency arising, and among the members of the Corps who were associated with this committee were Sir Eric Geddes, Sir Albert Stanley, Sir Maurice Fitzmaurice and Mr. C. L. Morgan, then Chief Engineer of the London, Brighton and South Coast Railway.

Staff and Offices.

On August 4th, 1914, the staff of the Railway Executive Committee consisted of six persons—a secretary, three male clerks and two messengers. It was soon afterwards increased to eight by the addition of two more clerks. There were, also, at the offices, two women and two men telephone operators supplied by the Post Office, for day and night duty respectively.

Notwithstanding the considerable expansion of work in the meantime, the committee's own staff had, by the spring of 1917, been increased only from ten to seventeen. It then consisted of a secretary, an assistant-secretary, twelve clerks (six men and six women), and three messengers. All of these had come from the controlled railways. A small staff of persons already familiar with railway matters and having a thorough understanding of their duties, was regarded as preferable to a larger number of less qualified persons who might, as was said, only get into one another's way. Still more had to be taken on, however, and by the autumn of

1919 there were thirteen men clerks, fourteen women clerks (shorthand typists) and four messengers.

Mr. Gilbert S. Szlumper, Secretary to the Railway Executive Committee, and a Lieutenant for many years in the Royal Engineers (Territorial Force) was given a staff appointment as Railway Transport Officer on the outbreak of war and on January 1st, 1916, was appointed a Major in the Engineer and Railway Staff Corps. He retired from the secretaryship in June, 1919, and was succeeded by Mr. G. H. Wheeler (London and South Western Railway).

Down to the signing of the Armistice the office hours extended to twenty-four per day for seven days per week. That is to say, there was a telephone operator always on duty in the exchange room in order not only to receive or forward Executive messages but to connect one railway head-quarters with another, or with a Government department, viâ the committee's offices, at any moment of the night or day, for the purpose of facilitating troop movements or otherwise, while three members of the staff supplemented their labours during the day by sleeping on the premises at night, with a telephone at their bedside, so that the operator on duty could arouse them at once in case they were wanted.

The life led by the clerical staff down to the time the Armistice was signed was a sufficiently strenuous one. They had daily turns and weekly turns of duty alternatively. In the latter case they went on duty on Saturday morning and remained on duty until the following Saturday, sleeping in the office each night during that period. The day would begin with big collections of correspondence, each member of the staff having allotted to him, in addition to ordinary clerical work, certain subjects of which he took charge, sometimes acting as secretary of the sub-committee concerned therein. The task of getting through this correspondence would be liable to almost incessant interruption owing to telephone messages, interviews with callers from Government departments or railway companies, and so on; but the clerk might, perhaps, console himself with the thought that he would be able to get on better in the evening, when things were quieter. So he would sit in front of his pile of papers again in the evening; but it might well happen that, before he had long started on them afresh, a telephone message would give an air-raid warning, and this would mean a very busy time for him until the "All Clear" intimation came to hand. Assume, however, that he managed to put in a full evening's work at his papers and got to bed by midnight, or thereabouts, escaping the infliction of an air-raid for the time being. It was still possible that he might be aroused out of his first sleep by an office-exchange message through the telephone at his bedside that the Ministry of Munitions (for example) had rung up. He would ask the Ministry what they wanted and learn, perhaps, that they wished to arrange at once for an urgent movement of explosives. He would get details, and, still sitting up in his bed—since there was no necessity for him to leave it—he would be "put on," through the committee's private wire, to one of the London termini, to the Midland at

Derby, the North Eastern at York, the Lancashire and Yorkshire at Manchester, or to any other company as occasion might require, give all needful instructions, and then resume his interrupted slumbers.

Having regard to the magnitude of the staffs which so many State departments deemed essential to the discharge of their war-time responsibilities, the fact that the Executive Committee entrusted with the control, in the name of the State, of all but about two per cent. of the railways of Great Britain found it sufficient to have no more than so very small a number of persons for their own head-quarters staff may appear to be sufficiently remarkable, if not actually incredible. One must, however, bear in mind what has already been said as to the position in which, as General Managers, the members of the Railway Executive Committee stood in being able to command the services of the staff of each and every one of, at least, the twelve leading railways they represented, with the certainty of ready assistance from any of the other controlled companies, in case they should require it, With such almost unlimited reserves available, and readily made use of, the committee had no real need of a larger staff in Westminster for the work to be done there than the one they acquired.

It is further to be remembered that, although it was the function of the committee to *control* the railways for the State, they were not responsible for *operating* them. Each of the controlled companies still had charge and direction of its own lines, and with the working of those lines, as separate entities, the Executive Committee had no concern apart from whatever had a bearing on national requirements in the prosecution of the war.

The modest proportions of the staff will also account for the otherwise remarkable fact that, at a time when one State department after another was either commandeering huge hotels, clubs, mansions or other buildings in London, or having blocks of temporary offices specially erected for them in parks or on other open spaces, the Railway Executive Committee should continue their own work in the same building in Westminster—if not, for a time, at least, in practically the same set of rooms—as had served them in the pre-war days.

Allowance must, however, once more be made for what were to be regarded as practically annexes of the Executive Committee's head-quarters in Parliament Street.

No sooner had our relations with Germany led to the conviction that war was inevitable than the Railway Executive Committee devoted much attention at the meetings held by them towards the end of July and in the early days of August, 1914, to the question as to the terms of the financial agreement between the railways and the Government which, as will be shown more fully in the next Chapter, was then still unsettled, although the principle of State control had been definitely decided upon. To these meetings the Executive Committee invited the Accountants of several of the leading railway companies in order to consult with them on the points at issue, and on August 9th it was decided that the Accountants

of six English and Scottish companies should meet and report (1) what arrangements would have to be made, and what instructions would have to be given to the various companies, in order that a uniform system should be adopted in arriving at the net receipts for a given period in 1913 and of the revenue and expenditure of each company during the time the railways were taken over by the Government, and (2) what steps could be taken to enable the Executive Committee to be kept advised periodically of the comparative receipts and expenditure during the State-control period.

The gentlemen to whom these duties were delegated became, in effect. the nucleus of an Accountants Committee which held its first meeting two days later ; appointed as its Chairman Mr. G. J. Whitelaw, Accountant of the Great Western Railway, and as its Secretary, Mr. C. R. Dashwood, now Assistant-Accountant of the same company, and was enlarged by the Executive Committee a week later. From that date it was composed of the Accountants of all twelve of the companies represented on the Executive Committee, namely— :

Caledonian.	London and North Western.
Great Central.	London and South Western.
Great Eastern.	London, Brighton and South Coast.
Great Northern.	Midland.
Great Western.	North Eastern.
Lancashire and Yorkshire.	South Eastern and Chatham.

Rooms for the accommodation of the committee were provided by the Midland Railway Company at their Westminster offices, 16 Great George Street, S.W., and from these head-quarters a vast amount of work n connection with financial questions, compilation of statistics, and so on, was to be done on behalf of the Railway Executive Committee, to which body an invaluable service was thus rendered.

During the initial stages of State control the Accountants Committee met twice or three times every week, One of its first duties was the preparation, under a remit from the Executive Committee, of a draft of the instructions necessary to give effect to the aforesaid agreement between the Government and the railways in reference to the basis of the compensation to be paid to the companies. When this matter had been decided, the committee were free to devote their attention to the other subjects mentioned as having been placed specially under their charge. In this connection they drew up the instructions issued by the Executive Committee to the controlled companies regarding the preparation by them alike of their monthly statements of receipts and expenditure and of their annual claims against the Government for compensation, arrears of maintenance, interest on capital, etc., in order that the amount of the net deficiency to be made good in the case of each company could be ascertained. By direction of the Executive Committee, all returns on these and kindred matters were forwarded to the Accountants Committee, as, too, were all the annual claims before being sent to the Government auditors. The annual claims so made by individual

companies were, also, prior to the submission of them to the Government auditors, scrutinised on behalf of the Accountants Committee by "investigators"—experts in railway accountancy sent out from the principal railway companies to examine the accounts of other companies. The reports made by these gentlemen were gone through in detail by the committee, and the work of the Government auditors was enormously facilitated. After the monthly statements of the companies had been examined and classified, they were finally grouped into one complete account for the whole of the controlled companies. Inasmuch as there were eighty companies whose accounts (which often included those of smaller companies associated with them) had thus to be dealt with, the volume of work even in this direction alone was very considerable. So smoothly, however, was the work done that, although the controlled companies had, under their agreement with the Government, the right to appeal to the Railway and Canal Commission, on no occasion had the adoption of this course been found necessary down to the autumn of 1920.

In addition to the preparation of "Instructions," the examination of claims, and other such duties, the Accountants Committee became responsible for the compilation of numerous financial statements and statistics. Thus it was arranged as early in the war as the middle of September, 1914, that monthly estimates of revenue receipts and expenditure as from midnight of August 4th, 1914, should be forwarded by all the controlled companies to the Accountants Committee to be analysed and otherwise dealt with by them. These estimates were supplemented, as from the end of September in the same year, by others showing (*a*) the amount of revenue which would have been received by the railway companies had they been paid for the movement of troops and materials conveyed for the military and naval authorities in connection with which no charges had been brought to debit; (*b*) the amount of expenditure which had been incurred by the railway companies (apart from the conveyance of troops and materials) against which no credit had been given,[1] and (*c*) the amount which, under charter warrants, would have been brought to debit against the military and naval authorities in respect to the railway companies' steam vessels which had been commandeered by those authorities, other than those employed by the Government in services for which revenue would be included under (*a*). The other financial statements and statistics prepared related to a wide range of subjects, among them being the effect on railway revenues of the wages concessions granted from time to time.

Much work was also thrown upon the Accountants Committee through the manufacture of munitions of war in railway workshops, and, also, through the subsidy scheme introduced by the Government in August,

[1] Services under (*b*) included, among other items, holding engines in steam; wages and expenses of staffs retained at stations in anticipation of Government requirements for the movement of troops; expenses incurred by keeping stations and signal boxes open beyond the usual time; use of goods warehouses, etc., for the accommodation of military stores; provision of rolling stock for special trains not required, and alteration of ordinary wagons to make them suitable for the carriage of guns, etc.

1919, as a means of relieving the pressure on the railways by diverting to coasting steamers traffic which could be carried by sea. These subjects will be dealt with fully in later Chapters ; but it may here be stated that the accounts in each instance were rendered to and paid through the Accountants Committee, and that those relating to munitions of war (including ambulance trains, etc.) amounted to about £17,000,000.

One of the most important of the many duties undertaken by the committee was the distribution among the controlled companies of sums due to them on account, not only of their munitions of war manufactures, as just mentioned, but, also, of their monthly and annual claims for compensation, arrears of maintenance, interest on capital, and other items. Altogether the sum total of the moneys which had passed through the hands of the committee down to the autumn of 1920 amounted to upwards of £227,000,000. By the end of June, in that same year, the committee had issued under their various accounts no fewer than 15,000 cheques.

In all this there is a suggestion that a committee which had so much to do must needs have had a big staff, even if it did not—following the example of State departments in general under war-time conditions—find it necessary to take over an hotel, or a substantial block of offices, in which to get through its labours. The actual staff, however, with which the committee started (and not reckoning therein the " investigators " of controlled companies' claims, etc.) was not more than three, while even in the time of its greatest expansion it did not exceed twelve. All of them were obtained either from the railway companies or from the Railway Clearing House and continued to receive their salaries therefrom, as before. As for headquarters, the committee retained the offices in Westminster placed at their disposal by the Midland Railway Company, the maximum number of rooms they there occupied being at no time more than five. Thus the cost to the public purse of so comprehensive and so efficient a system of railway accountancy as organised by the railway companies themselves under State-control conditions was, relatively speaking, almost infinitesimal.

The personnel of the committee underwent various changes, four different Railway Accountants having held office as Chairman, namely, Mr. G. J. Whitelaw (Great Western Railway), August, 1914–June, 1916 ; Mr. Walter Bailey (Midland), June, 1916–February, 1917 ; Mr. J. Charles Isaac (London and North Western), March, 1917–July, 1920, and Mr. R. Rigby (Great Central), the present chairman. Mr. Dashwood continued to act throughout as Secretary.

Another important *annexe* of the Executive Committee's headquarters was established at the London offices of the Lancashire and Yorkshire Railway Company, in Great College Street, Westminster.

When, in the very earliest days of the war, the Lancashire and Yorkshire's Superintendent of the Line, Mr. Arthur Watson, came to London to take the place temporarily of the company's General Manager, he established himself at the said offices, sleeping there for some time every night. He soon found so much to do that he sent for one of his assist-

ants in Manchester, Mr. T. W. Royle (now M.B.E.), and, subsequently, for others on his staff; and this was the beginning of a subsidiary organisation which was to get through a remarkable amount of work.

The first big job undertaken was in connection with the recruiting of railwaymen, the Great College Street offices becoming a centre for various committees formed by the Railway Executive to assist in meeting the apparently never-ending demands of the military authorities for "More men!" The work done in this respect was continuous throughout the war; but, in regard to one phase of it, the fact may be recalled that in the initial stages of the recruiting movement railwaymen who were to enlist in the Railway Troops came to London from all parts of the country, assembled in batches of up to 200 at a time in front of the Great College Street offices, answered the roll call in the open street, went through some other formalities, and, often headed by a band, marched off in a body to the recruiting authorities at Scotland Yard, going on thence to Longmoor for their military training. Different arrangements were made later on.

Then the appointment of Mr. Watson, early in 1915, as chairman of the Superintendents' Conference—a position he was to retain throughout 1916 and 1917—led to all those matters relating to travelling facilities for Army and Navy, Government Departments and the general public which came before the Railway Executive and were referred to the Superintendents for consideration and report finding their way to Great College Street. Questions concerning reduced fares; the issue of warrants and vouchers—and the regulations applying to them; the use of warrants as tickets; the introduction of a common form of ticket for Government departments; the arrangements to be made in connection with race meetings; the restrictions imposed from time to time on passenger travel; the increase in rates for season tickets; railway schemes in connection with home-defence; preparation of data concerning passenger travel; railway arrangements for the demobilisation of the Forces—these and many other matters which specially concerned the Superintendents of the Line brought an enormous amount of work to the little staff of Lancashire and Yorkshire men—never exceeding three in number [1] —got together in Great College Street. Everything done by them was, of course, subject to the approval of the Railway Executive Committee. All the same, there were innumerable occasions when, in regard to matters of detail involving no question of principle, the Great College Street staff would, in response, for instance, to telephone messages from some Government department, decide things "on their own" straight away, thus greatly facilitating transport arrangements which might require completion without loss of time.

Then the Railway Clearing House was the meeting place for a large

[1] The statement that so large an amount of work was accomplished by a staff of no more than three persons may be received with incredulity; but the fact was as stated. The three even undertook all their own typewriting owing to the secret or confidential nature of much that had to be done. Very late hours, even on Saturdays and Sundays, were kept for a considerable period.

proportion of the Executive Committee's sub-committees, while much use was made of the General Offices of leading railway companies in London or elsewhere for occasional conferences, in addition to the very considerable amount of work that, directly or indirectly, was done there for the Executive Committee.

The Cost of "Control."

Any inquiry as to the actual cost of the control organisation represented by the Railway Executive Committee is rendered most uncertain, if not actually futile, by the difficulty in deciding as to the basis upon which the estimates are to be made, the conditions differing from those of any other of the control systems instituted by the Government during the course of the war.

No Parliamentary grant whatever was made to the Railway Executive. Nor did the Committee have, strictly speaking, a "purse" of their own. They certainly had a banking account; but this was designed, not for the payment of salaries and expenses, but, more especially, for the regulation of accounts as between the controlled companies and the allocation among them of the sums received from the Government under the head of "compensation" or otherwise.

Members of the Executive Committee received no salaries for the services they rendered in that capacity. They were all General Managers of railway companies, they remained responsible to their directors for the efficient management of their own railways, and it was by their companies that their salaries were still paid to them.

The same principle applied to the Executive Staff. At no time was there any man or youth, woman or girl, thereon who did not come from one of the controlled companies; and all of them continued to receive their salary from their company, with any such increases or extra allowances as the altered conditions of the work to be done by them were thought to warrant.

All these salaries and payments were, in turn, charged by the controlled railways to their own working expenses, on which the Government guarantee was based.

The chief item of actual expenditure incurred by the Railway Executive in carrying out the control system it administered for the Government was in regard to printing and stationery. This was substantial in itself though small as compared with the printing and stationery bill of a trunk-line company, and the committee arranged that, instead of dividing the charges among all the controlled companies, they should be paid throughout the control period by a single company which, as in the case of the salaries, would add such payments to its "working expenses." The final result was the same, though trouble in the keeping of accounts was saved.

Though the difficulty of deciding as to the precise cost of controlling the British railways for the purposes of the war has thus to be admitted, it may confidently be claimed that, bearing in mind alike the capital

value of the lines taken over—£1,200,000,000—the magnitude of the traffic operations concerned, and the millions of money involved in the services rendered by the railway companies, no other State department assuming wide responsibilities under war-time conditions was administered with any approach to the same moderate expenditure, with less direct charge upon the public purse in respect to salaries, offices and working expenses generally, and with a simpler and more efficient basis of organisation than was the case as regards the little group of railway managers who constituted the Railway Executive Committee.

CHAPTER XI.

FINANCIAL ARRANGEMENTS.

WHILE the Government were acquiring all the advantages in the way of rail transport spoken of in Chapter IX., there arose the question as to the recompense to be made to the companies in return; and to this further branch of the subject, together with the financial arrangements in general, attention may now be directed.

It will have been seen that, under the Act of 1871, the Government were to pay "full compensation" to any railway company whose lines were taken over "for any loss or injury they may have sustained by the exercise of the powers of the Secretary of State"; and in the period which elapsed between the creation of the Railway Executive Committee, in November, 1912, and the declaration of war, on August 4th, 1914, the question as to the basis on which the said compensation should be paid was raised by the Government with the Executive Committee.

What the Government desired was that some scheme should be devised under which the State would not have to pay a greater amount in the way of compensation than the net loss the companies under control would be likely to sustain; and it especially wished to avoid what it thought the risk of having to meet claims for compensation made by individual companies owing to a diversion of traffic from their lines to those of other companies which might themselves gain a material advantage as the result of war-transport conditions. With a view to avoiding such a situation as this, they recommended that the railway companies to be taken over should create a universal pool of their receipts, the Government undertaking, if this were done, to make good any loss sustained by the pool, though not by individual companies.

The Railway Executive, while taking the view that no company would wish to obtain an advantage out of a national emergency, and that such a result was not likely to follow from an application of the Act of 1871, sought to co-operate with the Government in arriving at some arrangement which would remove all doubt or difficulty of this kind. There was, however, the possibility that the adoption, as it stood, of the Government proposal might prejudice the companies' claims to compensation under the Act of 1871; and the question at issue seemed to resolve itself into the framing of some collective scheme which, while dealing, in the first instance, with the ascertainment in one sum of the compensation payable to the controlled companies during the period of control would leave the companies free, after the period of control, to establish any

claim they might have under the Act of 1871 for damage done to their property.

These points were still under discussion down to the very eve of the outbreak of war.

On August 3rd, 1914, the Railway Executive informed the Board of Trade of their willingness to recommend that an agreement to the following effect should be entered into between the Government and the railways to be taken possession of by the State under the Act of 1871 :—

To ascertain the compensation payable, the aggregate net receipts of all the railways taken over during the period for which they are taken over shall be compared with a similar aggregate for the corresponding period of the previous year. The ascertained deficiency shall be the amount of the compensation due.

Any question as to the amount of the deficiency shall, in default of agreement, be determined by the Railway and Canal Commission.

The sum so payable as compensation, together with the net receipts of the railways taken over, shall be distributed among the railway companies in proportion to the net receipts of each company during the period with which comparison is made.

On August 6th the Government intimated that they would be prepared to accept the proposals of the Railway Executive Committee subject to the addition of the following proviso to the first paragraph of the suggested agreement :—

Provided that, if the aggregate net receipts for the first half of the year 1914 are less than the aggregate net receipts for the first half of the year 1913, the ascertained deficiency shall be reduced in the same proportion.

After consulting with its Committee of Accountants as to the possible effect of the proviso, the Executive Committee decided to advise the railway companies concerned to accept the agreement as amended, and there was sent to those companies, on August 8th, a letter in which the position was fully and most lucidly explained.

Within a week of this letter being sent out to the companies taken over by the State replies had been received from practically all of them, assenting to the proposed agreement ; and on September 16th the following announcement by the President of the Board of Trade appeared in the Press :—

The Regulation of the Forces Act, 1871, under which his Majesty's Government have taken possession of most of the railroads of Great Britain, provides that full compensation shall be paid to the owners of the railroads for any loss or injury they may have sustained thereby, the amount of such compensation to be settled by agreement, or if necessary by arbitration.

His Majesty's Government have agreed with the railway companies concerned that, subject to the undermentioned condition, the compensation to be paid them shall be the sum by which the aggregate net receipts of their railways for the period during which the Government are in possession of them fall short of the aggregate net receipts for the corresponding period of 1913. If, however, the net receipts of the companies for the first half of 1914 were less than the net receipts for the first half of 1913, the sum payable is to be reduced in the same proportion. This sum, together with the net receipts of the railway companies taken over, is to be

distributed amongst those companies in proportion to the net receipts of each company during the period with which comparison is made.

The compensation to be paid under this arrangement will cover all special services, such as those in connection with military and naval transport rendered to the Government by the railway companies concerned, and it will therefore be unnecessary to make any payments in respect of such transport on the railways taken over.

A modification in these arrangements was announced in a notice issued by the Board of Trade on April 14th, 1915, to the following effect :—

Under the original agreement the sum to be paid in compensation to the companies concerned was the sum by which the aggregate net receipts of their railways for the period during which the Government were in possession of them fell short of the aggregate net receipts for the corresponding period of 1913, subject, however, to a proportionate reduction if the net receipts of the companies for the first half of 1914 were less than the net receipts for the first half of 1913.

It has now been agreed that this reduction shall not in future be made, but that 25 per cent. of the war bonus granted to railway employés who come within the Railway Conciliation Scheme shall be borne by the railway companies, and not by the Government.

Compensation by Instalments.

So well had it been conceived ; so strict was the fidelity shown to its terms by each side, and so cordially did the companies recognise that the situation should be looked at on broad lines, that at no time did the agreement entered into form the subject of dispute or lead to even a suggestion of friction.

Questions on matters of detail certainly did arise for adjustment, owing to the wider experience gained or to the need for meeting conditions which had not been foreseen at the outset, and especially so owing to the prolongation of the war ; but all such matters were invariably found capable of friendly settlement.

One of these questions there was that presented itself within the first month of the war, and steadily became more acute.

While the bargain between the Government and the companies had, *as* a bargain, been regarded a perfectly fair one all round, the fact remained that certain of the companies found their cash resources were being seriously reduced owing to the fact that, under the arrangement which had been made, they were getting no payments for their naval and military transport work ; that their cash receipts, day by day, no longer equalled the normal cash receipts of 1913 ; and that they were, nevertheless, forced to spend abnormally large sums on working, and in other directions, in order to meet Government requirements. Under these conditions, some of the companies began to find their cash receipts insufficient to meet their outgoings, so that even the payment of wages presented difficulties.

It was, of course, open to these companies to get overdrafts from their bankers ; but the resort to this expedient raised another question. Would they be able to recover from the Government the interest to be paid on such overdrafts, the obtaining of which would be directly due to the conditions attendant upon the performance of Government work ?

In other words, did the Government guarantee of compensation include within its scope this particular item in respect to interest?

As regards the agreement itself, the position was that whilst the Government had certainly undertaken to compensate the railway companies, nothing had been said as to *when* the compensation would be paid. Should it be that the financial settlement would not take place until the end of the war, then the position of some of the companies, if not of the companies in general, would be gravely prejudiced.

In the opinion of the Railway Executive, endorsed by the conclusions of its Committee of Accountants, the most practical way of meeting the difficulties thus arising was that the Government should make periodical payments, at fairly short intervals, for distribution among the companies as instalments, or payments on account, of the compensation promised. Estimates prepared month by month of the receipts and expenditure on revenue account of each company would allow of approximate calculations, for such period, of the deficit in the aggregate net receipts which the Government had undertaken to make good, and if this deficit were paid to the Executive Committee, and divided on the same basis as that on which the compensation ultimately payable by the Government was to be distributed, relief would be given to the companies whose cash receipts were declining, the difficulty as to interest on overdrafts would be settled, and other questions which might arise among the railway companies themselves—such as those due to the discontinuance of Clearing House divisions, or the inequality of conditions as between the different companies—would be avoided. Inasmuch, however, as the periodical estimates would necessarily be approximate, they would have to be treated as strictly provisional statements, prepared solely for the information of the Government, without prejudice to the final settlement.

Connected with this proposal that the State should adopt a payment-by-instalment system was the technical detail as to what should be the exact interpretation of the words, "aggregate net receipts," in the proviso of the agreement made with the companies, the question as to the inclusion or exclusion of interest items being specially affected by such interpretation. It was known to be the view of the Government that, for the purposes of the agreement, "aggregate net receipts" should be understood to mean the net receipts covered by the first seven items in Account 8 of the first schedule to the Railway Companies (Accounts and Returns) Act, 1911—namely, "Railway," "Omnibuses," "Steamboats," "Canals," "Docks, Harbours and Wharves," "Hotels and Refreshment Rooms," and "Other Separate Businesses"—"Miscellaneous Receipts (net)" not being included. To this the companies replied that, if the recommendation as to periodical payments were adopted, there would be no need for the definition to extend beyond the seventh item, and the views of the Government could then be readily accepted.

All these matters were the subject of much consideration and correspondence, supplemented by interviews with State officials; but a satis-

factory solution was duly arrived at, the Government undertaking to pay to the Executive Committee, on the basis of the proposed provisional estimates, monthly instalments of the compensation to the companies under the terms of the agreement, while the companies concurred in the views of the Government as to what should constitute "aggregate net receipts."

Deferred Maintenance and Renewals.

From the very beginning of the war it was seen that, owing to the steady reduction of the railway staffs (in consequence of so large a number of men being released from the railway service to join the Colours), and, also, to the extensive use of rolling stock for military purposes, it would be impossible for the railway companies to undertake, during the continuance of the war, all the maintenance work and renewals in regard to permanent way, locomotives, carriages, wagons, stations, etc., which would have been carried out under normal conditions in order to keep the lines up to the high standard of efficiency characteristic of the railways of this country.

Delay, however, of such maintenance work and renewals—apart from what would be necessary to ensure the safe operation of the railways—meant the postponement of a good deal of expenditure which, if incurred at once, would be included in the working expenses to be borne by the Government, while the exclusion of it therefrom would reduce proportionately the deficiency to be made good, and might leave the companies to face, at the end of the war, liabilities in respect to deferred maintenance which would be all the greater because of the increased cost of then dealing with the accumulated arrears.

On the position as here stated being brought to their notice, the Government intimated that, at the end of the period of control, the companies might submit a claim for such amount as they would require to spend (including a percentage for increased cost) on the said arrears, in order to bring lines and rolling stock up to normal conditions.

When it was found that the war was likely to last much longer than had been anticipated, and when, also, they were being pressed, notwithstanding the further reduction of their staffs, to produce more and still more munitions and other military necessaries in their workshops—with the result that the accumulation of arrears steadily increased—the companies arrived at the conclusion that if their claims in regard to these arrears were not presented until the period of control came to an end, the sum-total thereof would, by that time, have assumed so large a figure, and the risk of various complications arising would have become so great, that much friction between the Government and themselves must inevitably result.

So a fresh series of negotiations was begun, and in August, 1915, the Treasury expressed their willingness to allow the Railway Executive Committee to include in its monthly statement of the deficiency in the net receipts of the controlled companies an amount calculated to repre-

sent arrears of repair and renewal of rolling stock, *plus* a percentage to cover the increased outlay which might have to be incurred when the arrears of work were eventually carried out. The first claim made under this head was to be in respect to the period from August, 1914, to date. In September, 1915, a like concession was made in respect to deferred maintenance and renewals of permanent way, signals, telegraphs, etc.

Revision of the Agreement.

In proportion as the duration of the war, and, with it, the period of Government control was indefinitely prolonged, it was further considered by the railway companies that great hardships would fall upon them unless certain points either unprovided or inadequately provided for under the original agreement—entered into at a time when only a comparatively short period of control was contemplated—were conceded to them.

There was, for example, the consideration that, although the agreement had guaranteed to the companies the same receipts as in 1913, it made no allowance in respect to capital expenditure which, though incurred prior to 1913, had not then had time to fructify, or which, alternatively, had had to be faced subsequently, whether on account of contracts previously made or otherwise. Under the agreement, the companies, while having to pay interest on this expenditure, obtained no advantage therefrom since the revenue produced by the increased traffic facilities afforded did not come within the scope of the 1913 receipts. The whole financial benefit, in fact, accrued to the Government, who were credited with the additional revenue without contributing anything even to the interest payable.

The sum-total of the expenditure in question amounted to a very substantial figure, and the unfairness of the position, so far as the railways were concerned, was beyond any possible doubt. Lord Faringdon, for instance, told the shareholders of the Great Central Railway at their annual meeting in February, 1916, that, apart from capital expenditure incurred before 1913 and only producing revenue since that year, the outlay of the company had amounted to £500,000 in 1913, £386,000 in 1914, and £266,000 in 1915—a total of £1,152,000 for the three years; while at the meeting in 1916 of the Metropolitan Company Lord Aberconway said :—

> We have brought into operation since 1913 some very important new works. . . . A considerable proportion of the new capital on which we have to pay interest in the accounts before you was required for the works in question, and, although these works are now earning revenue of which the Government gets the benefit, we have been left to bear the interest on new capital. This is scarcely in accordance with the spirit of our bargain with the Government, and, as a number of other companies are similarly affected, representations have been made to the Government in respect to it.

Negotiations on these and a variety of other matters were entered upon with the Government by the Railway Executive, and, as the

result thereof, the former expressed their readiness to accept the contentions of the committee on each of the points raised provided that they, in turn, were assured certain adjustments to which they attached importance. This condition was approved by the Railway Executive Committee, and, with the concurrence of all the controlled companies, there was added to the original agreement, in November, 1916, a series of supplementary clauses which had then been finally agreed to as interpreting and amplifying that agreement, and also as offering a mutually satisfactory solution of the questions that had arisen.

In regard to capital expenditure, the Government agreed to pay interest at the rate of four per cent. per annum, for the approximate period of control, on all sums expended upon works brought into use (including rolling stock, plant, and the land used in connection with works), or mineral support acquired for lines (1) during 1913 or (2) during 1914 or in subsequent years included in the period of control. Regulations in regard to the compilation of claims for the payment of this interest were also agreed to.

The method of dealing with stores at the end of the period of control was fixed ; [1] some further arrangements were made in respect to allowances to dependants of men serving with the Forces, and the Government undertook to bear the cost of making good any damage to railway property or plant (with certain exceptions) caused by bombardment or hostile aircraft.

As against the additions thus made to the agreement by desire of the railway companies, the Government wished to have a clearer definition of (1) those services rendered to, or accommodation or other things provided for, Government departments by controlled railway companies for which direct payment was to be made ; and (2) those in respect to which no charges were to be raised, the cost thereof being included among working expenses and recovered through the operation of the guarantee. A certain degree of difficulty and misunderstanding had arisen from time to time on this particular question, and there was now added to No. V. of the supplementary clauses a schedule in which

[1] The "Stores Agreement" was as follows :—

"At the end of the period of Government control, a cash payment to be made by the Government to each of the controlled companies equal to the difference between (*a*) the book value of the stores in stock at the 5th August, 1914, and (*b*) the value of the same quantities of similar stores calculated.

"(1) As to the extent those quantities are in stock at the end of the control period, at the book values then ruling.

"(2) As to the shortage in the quantity at the end of the control period as compared with the quantity at the beginning, at replacement prices.

"The replacement prices to be agreed between the Treasury and the Railway Executive Committee as fairly representing the prices at which the shortage could be made good, having regard to quoted market prices at the end of the control period, the probable movement of prices and the other circumstances of the case. Any amounts already received by the companies for replacement value of material used on work done for the Government must be brought into account when fixing the amount to be allowed under this clause.

"Regulations in regard to the calculation of prices, the definition of stores, and generally as to giving effect to this clause, to be agreed between the Government Accountants and the Railway Executive Committee."

the various services rendered by the companies were classed in one or other of the above-mentioned categories.

The following is the text of this Schedule, showing the classification and the other arrangements arrived at :—

SECTION I.

A. Direct cash payments will be made to the railway companies by the Government departments concerned for :—

All services rendered to public departments other than to the Admiralty, War Office or Ministry of Munitions.

B. Direct cash payments will be made by the Admiralty, War Office or Ministry of Munitions as follows :—

1. Special services called for by the Admiralty, War Office or Ministry of Munitions undertaken by the companies outside their ordinary functions of transportation and warehousing, which involve constructional services or the supply or manufacture of stores or plant for those departments, or the repair of property belonging to them, together with the labour cost in connection with any of those services except as otherwise herein provided for.

2. Season tickets.

3. Conveyance of dockyard officials and dockyard workmen between their places of residence and duty.

4. Agreed payments for occupation of and for damage to property the proceeds of which would not be included ordinarily " above the line " in Account No. 8 of the Schedule to the Railway Companies (Accounts and Returns) Act, 1911.

5. (A) Supplies of water, (B) Supplies of gas and electric lighting, and (C) Wages of staff employed, under pre-war contracts or agreements applying to these groups (A), (B) or (C).

6. Work done of £10 and upwards in value in each case for or on his Majesty's ships and other ships under the control of the Admiralty, but not on railway-owned boats. (*See* Section II., paragraph 14.)

7. Any other services which are agreed by the companies and the Admiralty, War Office or Ministry of Munitions, to be of a similar character to those detailed above, the cost of which is *not* chargeable to working expenses and recoverable through the operation of the guarantee.

8. Conveyance of members of Naval and Military Forces travelling upon police warrants endorsed " On Admiralty Service " or " Military."

SECTION II.

Direct cash payments will not be made to the railway companies by the Admiralty, War Office or Ministry of Munitions, in the following cases, the cost being charged by the companies in normal course to working expenses and recovered through the operation of the guarantee.

1. Conveyance of naval and military officers and men travelling under warrants.

2. Conveyance of civil officers and men (including dockyard workmen) belonging to the Admiralty and Naval Establishments when travelling on duty under warrants.

3. Conveyance of wives, widows and children of members of the Naval and Military Forces, and other persons when entitled to be conveyed at the public expense, on naval and military warrants.

4. Conveyance of members of the Naval and Military Forces travelling upon warrants endorsed "On repayment."

5. Conveyance of personal luggage of the foregoing up to the authorised quantity, and Government baggage.

6. Conveyance of corpses of members of the Naval and Military Forces, also of civilians (*e.g.*, dockyard workmen dying when away from their dockyard on detached duty) allowed to be carried at the public expense.

7. Special trains on naval or military service, under instructions from the Admiralty or War Office.

8. Conveyance (including all services provided for in the rate) of stores, arms and ammunition and other necessaries and things the carriage of which is authorised on Admiralty Notes (D. 80), War Office Notes (G. 980 or G. 996) or Munitions Notes (R. 365). In cases where traffic is carried without the use of these Notes, the companies will clear the charges on certification by the department concerned that the charges are a Government liability.

9. Conveyance of carrier pigeons for the naval and military services.

10. Meals supplied to naval ratings under the established meal order system.

11. Small steamboat, railway or dock works (other than stores) under £10 each in value not otherwise herein provided for.

12. Controlled railway companies' dock and harbour dues and berthing and mooring charges; also out payments on through traffic to publicly-owned ports, docks and harbours, *e.g.*, Port of London Authority, and Mersey Dock and Harbour Board.

13. Water, gas power or electrical lighting obtained from the railway companies' own sources of supply. Where any special arrangement is installed or provided for these purposes to the Government departments and the user can be measured, and the charges raised thereon have to be paid to third parties, the company making the payment will be re-imbursed by the department for which the supply is rendered.

14. Work done by the companies or by outside firms at the request of the companies for and on any railway-owned ships forming part of his Majesty's Navy for the time being; also cost of food, working of vessels and all other charges in connection therewith.

15. Damage done by his Majesty's ships to railway-owned boats not requisitioned by the Crown, the charge for which in any one case does not exceed £100.

16. Damage other than that provided for in Clause 15 (to piers, stations and other property for which the railway companies are responsible) not exceeding £100 in each case and not due to the culpable negligence or mischief of the servants of the Crown. Where the damage is traceable to the culpable negligence or mischief of the servants of the Crown, irrespective of amount, and in all cases where the value exceeds £100 a direct cash re-imbursement is to be made by the department concerned to the company affected.

17. Loss of railway-owned steamers requisitioned by the Government.

18. Rent of premises which would normally fall above the line in Account No. 8 of the Railway Companies' Statutory Form of Accounts.

19. Carriage of timber for his Majesty's Office of Works as laid down in Circular Letter No. 602, or any other traffic service for which the Railway Executive Committee have agreed not to demand cash payments.

20. Maintenance of sidings constructed on Government account, whether within or outside the boundary of a company's property.

21. Teeming or tipping and trimming of Admiralty coal (including that consigned to the Admiralty agents, Messrs. Mathwin & Son, or such other authorised agents of whom the Admiralty may notify the Railway Executive Committee) for ships of his Majesty's Navy, including transports.

22. Conveyance (including all services provided for in the rate) on behalf of the Admiralty, War Office or Ministry of Munitions, of stores, arms and ammunition,

and other necessaries and things intended for the Russian and other Allied Governments—the carriage of which is authorised on Admiralty Notes (D. 80), War Office Notes (G. 980 or G. 996), or Munitions Notes (R. 365).

SECTION III.

Any service, not hereinbefore specified, shall fall under Sections I. or II., but the question as to under which section it shall fall shall, in default of agreement between the companies and the department concerned, be referred to the Treasury.

SECTION IV.

Carriers' and Transit Notes.

1. The issue of Admiralty, War Office and Ministry of Munitions Notes, will henceforth be regarded as being restricted to cases where the liability for conveyance is a charge against the Government.

2. There will be no change in the existing forms of Admiralty (D. 80) and War Office (G. 980 and G. 996) Notes.

3. The existing procedure will be followed as regards the disposal of Admiralty and War Office Notes where both consignor and consignee are naval or military officers or departments, but for the future instead of pricing and raising charges on notes where the consignor or consignee is a contractor, the companies will collect and forward the notes to the Admiralty or War Office weekly for scrutiny, with a view to establishing Government liability. Any cases where such notes have been wrongly used for traffic for which the Government is not liable will be referred back to the companies, who will advise the department concerned of the amount chargeable, and the department will take steps to effect recovery, retaining the amounts so recovered. (The companies will give any information required as to the rates to be charged, and in the case of any questioned rates, the companies will advise the department what reductions (if any) can be allowed, and the departments will adjust matters with the contractors.)

4. The companies will return weekly to the Ministry of Munitions the notes in their possession upon which free conveyance has been afforded, and the Ministry of Munitions will compare these notes currently with the contracts, and where it is found that the contracts do not provide for carriage being a Government liability the Ministry will deduct the carriage in the cost account and retain the sum so deducted. (The companies will give the Ministry any information required as to the rates to be charged. In the case of any questioned rates the companies will advise the Ministry of Munitions what reductions (if any) can be allowed and the Ministry will adjust matters with the contractors.)

5. The companies will draw the attention of the Admiralty, War Office, or Ministry of Munitions to any notes which *prima facie* appear to be irregular, and will on the application of the Admiralty or War Office be prepared to select specified classes of notes and send them to those departments for scrutiny.

SECTION V.

All existing outstanding accounts, irrespective of the clauses of this memorandum under which they may fall, to be treated as settled and closed so soon as the departments concerned return the accounts rendered with endorsements that the charges are Government liabilities, when the companies will cancel the transactions in their books and recover the sums due through the Compensation Account.

Another clause added to the agreement to meet the wishes of the Government dealt with the adjustment of accounts. It laid down

that every company should give an undertaking to repay to the Treasury, with interest at the rate of five per cent. any sums which, on a final settlement of the accounts of any period ending December 31st, might be found to have been received or retained by such company in excess of the amount to which it was entitled.

CHAPTER XII.

MOBILISATION.

When in the last days of July, 1914, the emergency provided for by those War Office mobilisation schemes which had been revised, amended or newly drawn up by the railway companies in conjunction with the Railway Executive Committee was seen to be steadily approaching, details of the movements, together with " Instructions " as to the working of the traffic under emergency conditions, were communicated by the General Managers to their Superintendents or other responsible members of their staff in order that they might study them and be prepared to carry out the necessary local arrangements when mobilisation was actually declared. The entire programme was based on the assumption that mobilisation of the Navy, the Commands and the Expeditionary Force respectively would in each case begin and continue on certain dates, known provisionally as " 1st day," " 2nd day," and so on. In this way, and allowing for the running of an adequate service of trains on a Sunday, should one intervene within the first three days of mobilisation, the said arrangements could be initiated at once whenever the occasion arose.

As it happened, the transport situation had been greatly complicated—from the point of view of the coming emergency—by the fact that during the week beginning Sunday, July 26th, there were large movements of Territorials to camps situate in many different parts of the country to which they were to go for their annual training. Concurrently therewith a number of regular regiments also went under canvas. This particular troop traffic—supplementing the additional civilian traffic in anticipation of the August Bank Holiday—attained its maximum on Saturday, August 2nd, notwithstanding the representations made by the railways that, in view of the critical nature of the situation, it would be better not to send any more men into camp at all. The movement was even continued on Sunday, August 3rd ; but matters on the Continent had, by this time, assumed so grave an aspect that Territorials who started by train for their camps during the course of the morning were recalled either *en route* or immediately on arriving at their destination. In the afternoon or the evening of the same day orders were given that Regulars and Territorials in camp should all return as soon as possible ; and the railways had to arrange for their transport accordingly.

This in itself was a big undertaking. It was, also, one that had been

unforeseen and for which no provision could have been made in a pre-arranged programme.

The Cambrian Railway Company, for instance, got word, late on the Sunday night, that 9,000 men in Welsh Territorial camps on that system—namely, 5,000 at Aberystwyth and 4,000 at Portmadoc—were to return to a wide range of destinations in North and South Wales. The move involved the running of twenty-seven trains, and this, too, following on the dispatch, towards the end of the previous week, of 2,000 officers and men in the 16th Brigade of Regulars, seventy-six horses, forty carts, a number of transport wagons, and 200 tons of luggage from Llanidloes to the North-East Coast. But the matter was urgent, and by Monday night all the trains, with a few exceptions, had been sent off.

The West Lancashire Territorials returned in thirty-three trains by the London and North Western from their camp on the borders of North Lancashire and Westmorland. The Northumberland Territorials left Conway, North Wales, for the North-East Coast, requiring nineteen trains. The Staffordshire Territorials filled thirteen trains when they left St. Asaph, and eleven trains were needed to convey the Warwickshire Territorials from Rhyl to the Midlands. The London and South Western provided thirty-eight trains from Amesbury and district for the conveyance of the Home Counties Brigade to their home stations, and eighteen trains for the 1st London Division from Wool, etc. Other companies had similar experiences.

Many of the reserves in the Naval Forces had been called up between July 12th and 14th in connection with a test mobilisation scheme, on the conclusion of which the Fleet did not fully demobilise. Mobilisation of the remaining Naval Reservists took place on August 2nd. It was carried out with perfect smoothness.

Mobilisation of the Military Commands was ordered on the night of August 4th, concurrently with the declaration of war. It was begun the following day, when the machinery so carefully designed in peace-time began almost automatically to work.

The Command mobilisation schedules applied to (1) Territorials, (2) Reservists, (3) Special Reservists (old Militia), and (4) horses for the Regular Army. Territorials and Reservists in all parts of the country had necessarily to travel to their headquarters by ordinary trains, as far as possible; though, in accordance with the pre-war understanding, it was announced that, apart from the military trains, any man travelling on a military or naval warrant in an ordinary train, or any man in naval or military uniform not holding a warrant but paying his fare, was to have precedence of civilian passengers even if such precedence involved the turning of civilian passengers out of the train.

This initial step completed, mobilisation moves proper began with the sending of the Reservists by special trains from the depôts where they had thus assembled to the places where their regiments were stationed. The mobilisation of horses meant that many thousands of horses on which the War Office had a claim in case of emergency would

be collected by private individuals of responsible position who had undertaken the duty of getting them to certain stations on fixed days of the mobilisation period for conveyance by special trains to the principal military centres from which they would be taken on with the Expeditionary Force. The further fact may be mentioned, as illustrating what was done by the railway companies in general, that the number of special troop trains run on the Great Western system during the fourteen days over which the mobilisation period extended was no fewer than 632. The corresponding figure on the London and North Western was 550 trains, and other companies in proportion. These figures include special trains alike for Regulars, Territorials and the Naval Forces.

CHAPTER XIII.

THE BRITISH EXPEDITIONARY FORCE.

UNDER the War Office scheme of 1906, the Expeditionary Army which had been organised for service abroad in case of need consisted in 1914 of six divisions of infantry and one division of cavalry, with a nominal strength, including men of all arms, of approximately 150,000 officers and men.

On August 6th, 1914, the Government sanctioned the immediate dispatch to France of four of the six infantry divisions and the one cavalry division ; and, in mentioning this fact in his book on " The Grand Fleet," Admiral Viscount Jellicoe says : " During the past three years every detail had been worked out between the two services for landing the Force in the north-west of France, and a plan of campaign settled which promised to reduce the risk to a minimum."

According to the peace-time programme as drawn up between the military and the railway authorities, the embarkation of the Force should have begun on the same day as mobilisation was started, namely, August 5th, and all the rail-transport arrangements had been made on this basis ; but, for military or political reasons wholly unconnected with the railways, the dispatch of the Force was not begun until August 9th. The effect of this postponement was that the earliest days of the mobilisation of the Expeditionary Force were concurrent with some of the heaviest days of the mobilisation of the Commands, and this combination affected to a certain extent the running of the Command trains, some of these having to give way to the Expeditionary Force trains. It thus became necessary to remodel the railway time-tables in order, for instance, that the first day of the mobilisation of the Expeditionary Force could be superimposed on the fifth day of the mobilisation of the Commands without causing confusion or delay.

Happily this re-arrangement of the programme on, as it were, the spur of the moment, was carried out with perfect success. All went off smoothly, although the work and the responsibility devolving upon the Railway Executive Committee and the railway companies were, for the time being, materially increased.

The first train in connection with the embarkation of the original Expeditionary Force, on the basis stated above, was booked to arrive at Southampton on Sunday, August 10th, at 8.48 a.m. The time at which it actually arrived there was 8.15 a.m. On August 17th, the last train for the day with troops for France was due to arrive in Southampton Docks at 6.0 p.m. It got there twenty-two minutes in advance of time.

During this period of eight days, from August 10th to August 17th,

inclusive, the traffic received at Southampton in connection with the embarkation of the Expeditionary Force was as follows :—

NUMBER OF TRAINS		334
PERSONNEL :—		
Officers	2,825	
Other ranks	66,022	
		68,847
HORSES :—		
Officers' horses	481	
Riding and draught	21,042	
		21,523
GUNS		166
VEHICLES :—		
4-wheel	1,751	
2-wheel	695	
		2,446
BICYCLES :—		
Motor	97	
Ordinary	1,271	
		1,368
BAGGAGE AND STORES (*tons*)		2,550

Special measures had, in accordance with the plans already laid down, been taken by the Admiralty to ensure a safe crossing of the Channel, and this was effected without any attempt at interference on the part of the enemy.

On the morning of August 18th, the newspapers published the following announcement by the Press Bureau :—

> The Expeditionary Force, as detailed for foreign service, has been safely landed on French soil. The embarkation, transportation and disembarkation of men and stores were alike carried through with the greatest possible precision and without a single casualty.

From the point of view of the railways, however, this announcement did not cover the entire movement for which they had prepared. The dispatch of reinforcements of the original Expeditionary Force was to follow at once and proceed without a break until August 31st ; and this full programme was carried through with such completeness that by the said date the military traffic dealt with at Southampton since August 10th had assumed the following proportions [1] :—

NUMBER OF TRAINS		670
PERSONNEL :—		
Officers	4,653	
Other ranks	113,801	
		118,454
HORSES		37,649
GUNS		314
VEHICLES		5,221
BICYCLES		1,807
BAGGAGE AND STORES (*tons*)		4,557

[1] This heavy troop traffic had been worked with little or no interruption of ordinary civilian traffic.

The arrivals of personnel and material at Southampton between 10 p.m. on August 21st and 6 p.m. on the following day were the heaviest dealt with there, in a corresponding period of time, not alone in connection with the embarkation of the Expeditionary Force, but during the entire course of the war. The number of troop trains reaching Southampton Docks in these twenty hours was seventy-three, and they conveyed 536 officers; 16,361 other ranks; 4,583 horses; 72 guns; 708 vehicles and 375 bicycles.

Nor did the last train of the series in question fail to show the same punctuality as had already been shown by its predecessors. It was due to arrive at Southampton Docks at 6.20 p.m. on August 31st. The hour at which it got there was 5.58 p.m.

Reviewing the military situation in a speech he delivered in the House of Lords on August 25th, 1914, as Secretary for War, Lord Kitchener said:—

> As to the work of the last few weeks, I have to remark that when war was declared mobilisation took place without any hitch whatever, and our Expeditionary Force proved itself wholly efficient, well equipped and immediately ready to take the field. . . .
>
> The railway companies, in the all-important matter of transport facilities, have more than justified the complete confidence reposed in them by the War Office, all grades of railway services having laboured with untiring energy and patience. And it is well to repeat that the conveyance of our troops across the Channel was accomplished, thanks to the cordial co-operation of the Admiralty, with perfect smoothness and without any untoward incident whatever. We know how deeply the French people appreciate the value of the prompt assistance we have been able to afford them at the very outset of the war.

Sir John French, in a dispatch dated September 12th, 1914, dealing with the movements of the Expeditionary Force from the time of its concentration on French soil, said:—

> The transport of the troops from England both by sea and by rail was effected in the best order and without a check. Each unit arrived at its destination in this country well within the scheduled time.

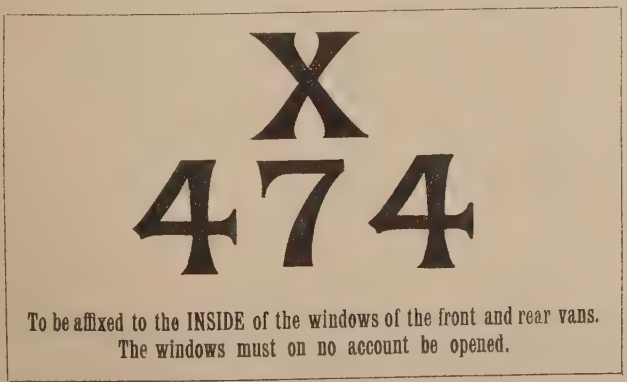
So far as the British railways were concerned, the part taken by them in the carrying out of this remarkable movement of an army under conditions unexampled in the history of war was no more than the practical outcome of those peace-time preparations on which, as a matter of national policy and railway foresight, so great an amount of labour had been spent in bygone years; yet, while making full allowance for what has already been stated as to the apparently interminable compilations and revisions of Emergency Time-tables, the world may well wonder "how it was done." A brief account thereof may thus be regarded as a matter of public interest.

For the rail movements involved in the transport of the Expeditionary Force to Southampton, the London and South Western had been appointed "Secretary Company." That is to say, all communications from the War Office in regard to the strength of units destined for overseas were sent to the South Western, which then had to communicate with the other railway companies concerned. The primary factor in the

situation was the exact time at which each and every unit could be received at Southampton Dock Gates without causing delay or congestion. For this reason all arrangements had to be made backwards.

In effect, the War Office, when the Expeditionary Time-tables were being made up, supplied to the South Western full lists of the troops, etc., to be embarked at Southampton for each successive day of the period over which the dispatch of an Expeditionary Force would extend. The South Western then fixed the times at which the units for the day—allocated in each instance to a certain number of trains—could be unloaded in or near to the particular berth in the docks where their transport would be waiting. If the units in question were to start from Aldershot or any other camp on the company's own system, the South Western would itself make all the necessary arrangements. But if the units were to pass on to that system from the lines of (say) Company A, the South Western would inform Company A of the times at which it would be prepared to receive the trains at a specified junction. Should Company A itself have to accept the traffic from Company B, it would, in turn, give a similar intimation to this third company, and the process would, if necessary, be repeated until the company on whose line the traffic originated was reached. It would then be for this company to fix the times at which the unit would entrain at the starting point; and, on these times, together with the times for the junctions and other important points *en route* (with due allowance for meals), being communicated to the South Western, that company would be able to supply the War Office with the hour of departure on which the military arrangements at the entraining station would have to be based.

The plans thus adopted were facilitated by the fact that each train, loaded or empty, together with the engine working it, bore labels giving the letter "X" and a number, printed in red ink and in prominent type, these labels being displayed on the engine itself and on the insides of the windows of the front and rear vans of the train.



SPECIMEN OF LABEL USED ON EXPEDITIONARY FORCE TROOP TRAINS.
(Printed in Red Ink.)

The letter "X" was recognised by all railwaymen as indicating a train forming part of the Expeditionary Force movement, and every effort would be made to ensure punctual running. For the purposes of identification and, also, of simplification in the arrangements, each train was referred to by its number in all communications between the companies and in all instructions to the staffs.

The smoothness with which the scheme operated at stations from which the troops began their memorable journey is suggested by the following references in the *Daily News* to the departures from Aldershot :—

It was a wonderful achievement of toil, done in the light of flares and arc lamps. Not a man or horse was injured. Not a wagon or field-piece damaged. When medals are distributed the railway workers should certainly receive them. The automatic regularity of the departure of trains was truly marvellous ; they worked to a time-table, and were run with greater punctuality than is the ordinary traffic of an August Bank Holiday. A half battalion of infantry marched up, hoisted their machine-guns and water-cart aboard, climbed into the waiting carriages themselves, and twenty minutes later they were off. Little more time was expended upon a squadron of cavalry or a battery of artillery, although there were horses to box and guns to mount on trucks.

During the twenty-one days over which the complete movement referred to extended, the troop trains were to reach the docks at intervals of twelve minutes, with, however, breaks alike during the day and on the conclusion of each day's work, mainly for the making good of any delay that might occur and cause an interruption in the programme. The average period over which the work extended per day was fourteen hours.

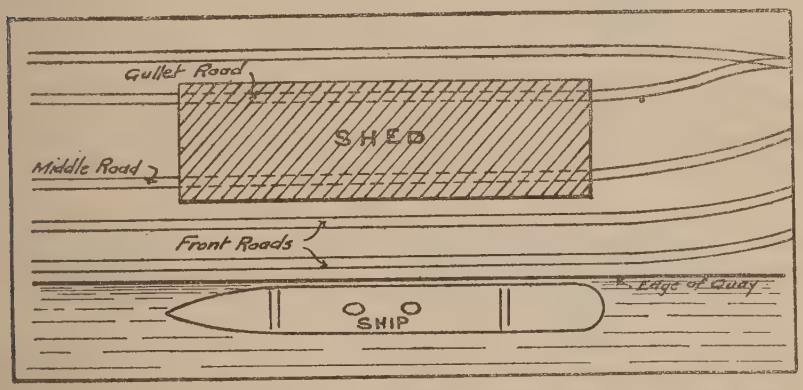
This system of arrival at twelve-minute intervals can best be illustrated by the following timings in respect to the seventy-three trains which constituted the record of August 21st–22nd, spoken of above :—

10.12 p.m.	4.24 a.m.	8.12 a.m.	12.24 p.m.	3.48 p.m.
10.24 ,,	4.36 ,,	8.24 ,,	12.36 ,,	4.0 ,,
10.36 ,,	5.0 ,,	8.36 ,,	12.48 ,,	4.12 ,,
11.48 ,,	5.12 ,,	8.48 ,,	1.0 ,,	4.24 ,,
1.0 a.m.	5.24 ,,	9.0 ,,	1.12 ,,	4.36 ,,
1.12 ,,	5.36 ,,	9.12 ,,	1.24 ,,	4.48 ,,
2.0 ,,	5.48 ,,	9.36 ,,	1.36 ,,	5.0 ,,
2.12 ,,	6.12 ,,	10.12 ,,	2.12 ,,	5.12 ,,
2.36 ,,	6.24 ,,	10.24 ,,	2.24 ,,	5.24 ,,
2.48 ,,	6.36 ,,	10.36 ,,	2.36 ,,	5.36 ,,
3.0 ,,	6.48 ,,	11.12 ,,	2.48 ,,	5.48 ,,
3.12 ,,	7.0 ,,	11.24 ,,	3.0 ,,	6.0 ,,
3.36 ,,	7.12 ,,	11.36 ,,	3.12 ,,	6.12 ,,
4.0 ,,	7.24 ,,	11.48 ,,	3.24 ,,	
4.12 ,,	7.36 ,,	12.12 p.m.	3.36 ,,	

On the arrival of all Expeditionary Force trains at the Dock Gates, the docks officials, identifying them by their number, and knowing by means of the programme for the day the units that each conveyed (officers, men, horses, guns, vehicles, etc.), and the particular transport

allocated thereto, were able at once to direct the trains, in succession, to the berths where the vessels on which these units would embark were moored. This operation was facilitated by the fact that the docks had been previously cleared of rolling stock, thus giving full scope to the facilities of the port for the movement of troop trains. Further than this, all commercial cargo had previously been cleared out of the sheds, so that the equipment could be dealt with in the "gullet road" and taken alongside the transports without obstruction. The trains, on arriving in the "gullets," would be only about 150 feet from the troopship assigned to the units brought by them, and the process of embarkation could proceed at once.

As for the unloading of the trains, this was effected with remarkable expedition. Taking the average of the various berths, the period which elapsed between the arrival of a full train at the entrance to the docks and



RAILS, SHEDS, QUAY AND SHIP, SOUTHAMPTON DOCKS.

its departure empty therefrom was only about forty minutes. The average time taken in the unloading of men, wagons, artillery and horses from a composite train when it reached its appointed berth was not more than from twelve to fifteen minutes. No fact could demonstrate more clearly the absolute efficiency with which the working of the port was conducted under conditions of such intense activity and strain.

When the troop trains had unloaded their passengers at Southampton Docks, another elaborate set of arrangements came into force. It was, in fact, necessary that the time-tables for the running of the trains should be supplemented by others which would deal with the disposal of empties. It was accordingly specified in regard to each empty train (1) at what time it should leave the docks and (2) the destination to which it should proceed either for a further load or otherwise.

In regard to moves "local" to the London and South Western—say from Aldershot or Amesbury to Southampton—there would be time-tables showing at what hour the engines were to leave the Locomotive Depôt for the Rolling Stock Depôt and thence to loading stations; the

time at which the empty train should be there ; the time of leaving for Southampton ; the time at which the once-more empty train should leave Southampton, and the further arrangements in respect to engine and coaches for the day.

Finally, it has to be remembered that, whereas ordinary time-tables generally stand good for a month, at least—if not for the summer or for the autumn and winter—mobilisation, emergency and other military time-tables, together with the number and the composition of the troops to be moved, will vary from day to day, one result thereof being that a considerable amount of work may be involved in the re-forming of trains. Yet the entire three weeks' programme at Southampton was carried out with almost clockwork regularity and with an entire absence of confusion or delay.

In order, however, to realise the full significance of this achievement in troop transport, one must consider what was the actual effect on the military situation in France of the timely arrival there of the first of our Armies under the conditions here detailed.

The story thereof could not be told in better words than those of Mr. Lloyd George when, in moving in the House of Commons on October 29th, 1917, that the thanks of the Empire be given to the Services for the part they had taken in the war, he said :—

> The old Army, the finest body of troops in the world at that time, more highly trained, more disciplined, more perfect in physique—it saved Europe. In the retreat from Mons it delayed overwhelming hordes of the enemy ; at the Marne it helped to roll back the invader ; but more than all at the great first battle of Ypres—one of the decisive battles of the world—with unparalleled tenacity and sacrifice it held superior forces for weeks, and held them finally. The enemy superior in numbers and material ; our troops short of heavy artillery and ammunition, with no reserves. Every man was put in, cavalrymen, cooks, drivers, servants, and through the individual effort of officers and men, iron discipline, and dogged determination, the Army held out to the last and saved us from disaster. By the end of November France was saved, and Europe, and there was hardly a man left out of the old Army. One division went into battle 12,000 strong. It came out 3,000. Of 400 officers only 50 were left—in one battle. The old Army is the Army that gathered the spears of the Prussian legions into its breast, and in perishing saved Europe. No sacrifice in the history of the world has had greater results, and those seven divisions have a unique position in history and in the annals of the British Army.

In recalling these events it is essential to bear in mind that the battle of Mons, in which our " old Army " had their first encounter with what was then an overwhelming force of the enemy, was fought on August 23rd, 1914, seven days after the Press Bureau announced the arrival of the Expeditionary Force in France and within a fortnight of the time when the embarkation from Southampton had begun. This battle and the delay in the enemy's advance effected by our men in the retreat that followed were the beginning of that memorable series of events which, in the words of Mr. Lloyd George, as quoted above, " saved Europe " ; and what we may ask ourselves is—Supposing that the British railway

companies had not devoted so much attention as they had done to the preparation of their Emergency Time-tables and the perfecting of their other arrangements in connection therewith, in advance of any emergency arising; that they had shared in the unpreparedness which, rightly or wrongly, was attributed to the country as a whole; that, in consequence thereof, the attempt to carry out the mobilisation and the embarkation of an Expeditionary Force at so short a notice had either led to chaos or been attended by serious delay in the arrival of that Force on the other side of the Channel; what would have been the probable result of such conditions? Would it still have been possible to "roll back the invader" and to save France, if not, also, to save Europe, by the end of November, 1914?

These questions can be more readily asked than answered; but the reader may well be invited to consider them from the point of view of the effect that Rail-Power—and more especially Rail-Power based on good organisation—must have had upon the whole course of the war.

CHAPTER XIV.

TROOP TRAFFIC ARRANGEMENTS.

GREAT as the feat accomplished in the carrying through of the mobilisation and embarkation arrangements in connection with the Expeditionary Force may appear to have been, it was, relatively speaking, only the beginning of things. Whereas, in fact, the number of troops concerned therein attained to the hundreds of thousands, there were other movements of personnel to follow, the aggregate of which ran into millions.

While, also, the initial moves had been according to plan, as prepared in all essential details well in advance and as applying to the railways as a whole, those that came later were more or less based on new developments overseas, on local conditions at home, or on arrangements concerning a limited number of companies, thus calling for a different basis of organisation, from a rail-transport point of view.

All movements of divisions or other large bodies of troops for overseas were still arranged, on the initiative of the War Office, through the Superintendent of the Line of the railway company responsible for the embarkation, representatives of the leading lines concerned meeting representatives of the military authorities for the purpose of working out the necessary details.

How the system was carried out in practice may be shown by assuming that a military unit was to be entrained at Edinburgh (Waverley Station) for Southampton Docks, viâ Berwick, York, Mexboro', Banbury and Basingstoke; that two trains, which may be called "X 401" and "X 402," had been allotted for the journey, and that the South Western had fixed upon 3 p.m. and 4 p.m. as the times at which those trains should arrive. It being about one hour's run between Southampton and Basingstoke, where the South Western would receive the trains from the Great Western, the latter company would be advised to have them there, the one at 1.50 p.m. and the other at 2.50 p.m. The Great Western would then advise the Great Central when the trains should be at Banbury; the Great Central would give the North Eastern the time for the arrival at Mexboro', and the North Eastern would communicate with the North British concerning Berwick. So it would be for the North British to fix the time at which the trains would leave Edinburgh in order to suit all these other arrangements. In the event of these Edinburgh trains being returned to that city, the same procedure as before, though in the opposite direction, would have to be adopted, each company being informed as to the time at which its own junction would be reached.

Instructions concerning special troop movements within Great Britain were given by the military Command in which the move would originate, and they were so given direct to the Secretary Company whose duty it would be to arrange for all troop movements within that Command, whether the traffic should pass over the company's own lines or not. The making of arrangements through the Secretary Company was the course followed until the early days of September, 1914, the idea being that, so long as the mobilisation schemes were in progress, it would be preferable, from a military point of view, if communications had to be sent to as few companies as possible. In this way if troops had to be moved from, for example, Plymouth to some other point on the Great Western system, instructions were given, not to the Great Western Company, but to the London and South Western as the Secretary Company for the Southern Command.

On the completion of the full mobilisation programme, by the end of August, 1914, the Commands received instructions from the War Office that thenceforward they were to make their arrangements in respect to troop movements direct with the entraining company instead of through the Secretary Company. Under the new system, which came into force on September 14th, if the Western Command wanted to move a brigade from, say, North Wales to some place in the Southern Command, it got the sanction of the War Office, asked the Southern Command if it could receive the brigade, and then communicated with the railway company on whose lines the brigade would entrain, leaving the company to make arrangements with any others that might be concerned in the move. A year's experience was to show, however, that the previous system of working through Secretary Companies was of great advantage in the planning and carrying out of emergency troop moves, and this method was accordingly reverted to, subject to the modification that the London and North Western, which was already Secretary Company for the Western Command, now acted in a like capacity for the Eastern Command (in place of the South Eastern and Chatham) and also for the Central Force.

Command Orders for Troop Movements.

Whilst authority was thus conferred on the military Commands (each of which was regarded as practically a section of the War Office) to make their own arrangements with the railway companies for the transport of troops, subject to the limitations stated, there was one most important reservation; and this was that orders for special troop movements—as distinct from the conveyance of small parties of men by ordinary trains—were to be given exclusively through the Deputy-Assistant-Director of Rail Transport at the headquarters of the Command. Should the railway officials receive an order locally, in respect to a special troop movement, from any subordinate military officer, they were to disregard it and refer the officer to his own headquarters.

The value of this eminently wise and prudent stipulation could hardly

be exaggerated. By railwaymen it was regarded as "absolutely the saving clause." In the dispatch of a special troop train from, say, A to B, it was necessary to consider, not alone the convenience of the local commander at A, but whether B station would be ready to receive the troops on their arrival; whether the running of the desired special might not upset the working of other trains already arranged for, and whether the train sent to B could, in any case, be made use of for a further journey from that point or would have to return empty.

Local commanders were not always ready to appreciate the technical difficulties or exigencies of railway operation, and for the first six or eight weeks of the war, especially, some of them caused much trouble to railway officials in various parts of the country by the attitude they thought they were entitled to assume towards them. They would ring up on the telephone at all hours of the day or night and order that a special train, or a series of special trains, should be ready at a certain time on a certain day to convey their men to a specified destination, such order being given regardless of any other traffic with which the carrying of it out might clash. In some instances it was a special train for an individual officer that was required. Compliance with such orders would, in some instances, have speedily reduced the railway to chaos; in others there would have been a wasteful working which it was especially desirable to avoid; but local commanders who, on their making these demands, were politely referred to the Command headquarters, were at first apt to assume a tone of great indignation and to reply—in so many words—that the railways had been taken over by the State, that they themselves represented the State, and that it was the duty of railway officials to obey the orders they gave to them.

Happily the railways were always certain of getting the fullest support from the Command headquarters, where the technicalities of railway working were much better understood and where, also, a firm adherence to the rule which had been laid down was maintained. In one instance, at least, a local military officer suffered the humiliation of being required to go to the station-master of a country station and make a personal apology to him for things he had said on finding that the orders he had thought fit to give on his own authority about the running of trains could not be complied with.

Experiences of the kind in question—and often leading to almost inextricable confusion if not, at times (as in the Franco-Prussian War), to results positively disastrous in their nature—have been characteristic of practically every war in which railways have ever been made use of; and, if they are referred to here, the purpose thereof is not to cast reflections upon military men who may not have understood all that their own interference with the working of so complicated a piece of machinery as a railway might involve, but to show how, thanks to the cordial co-operation between the Commands and the railway authorities, effective measures had been taken to obviate the difficulties which must otherwise have arisen. The requirements of the situation were soon recognised

by the local commanders, and the further relations between them and the railway officials were, on the whole, remarkable for their cordiality and for the readiness of each side to show every possible consideration for the other.

Railway Military Staffs.

From the time of the outbreak of hostilities, each of the principal British railway companies had a special Military Staff, formed out of its ordinary clerical staff, and having the special function of dealing with all naval and military traffic in which the company was concerned either as an individual company or as a Secretary Company. In three instances—the London and North Western, the Great Western and the London and South Western—Military Departments were formed some years prior to the war for the purpose of dealing with current troop moves, mobilisation and emergency time-tables, etc., the staffs undertaking the work for the two former companies devoting themselves exclusively thereto. On the advent of the war these departments continued their military-transport work in its applied and expanded form. Other companies which had not previously had staffs specially allocated to military work established Military Sections or Military Departments of their own, while the staffs of all these departments—as it may be convenient to call them, by way of a general title—started forthwith on a term of war-time duties which, worked in relays, was to continue night and day, weekdays, Sundays and holidays, without any break whatever, until the signing of the Armistice and even after that. Some of those who took on the duties in question were at first quite unfamiliar with them ; but the individuals selected for posts of quite exceptional importance and responsibility had, in the course of a few weeks, invariably become experts in dealing at the shortest notice with every phase of the naval and military transport problem, so that the organisation of these special staffs at railway head-quarters must have been of great advantage to the military and naval authorities no less than to the railway companies themselves. Including typists and messengers, the strength of a railway Military Staff rarely exceeded fifteen or twenty, supplemented with the help of additional time-table experts as might be necessary.

Certain of the companies worked their Military Departments on a basis somewhat different from that adopted by other companies, such differences being designed either to meet special circumstances or to accord with the company's ideas as to the best methods from the point of view of their own system ; but, speaking generally, the main functions of such a department in war-time were—to receive instructions from the military or naval authorities with regard to troop and other movements ; to work out all the details in connection with times, rolling stock, engines, etc., and to give the necessary instructions to those primarily concerned. The requirements would be notified, in the case of military moves, by the War Office direct, by the Command with which the company was associated or by a Secretary Company. In this way it would, among other

things, be for the Military Staff at the railway headquarters to arrange, at the request of the Command authorities, for such moves as local military commanders might, at the outset of the war, have thought they were entitled to ask local railway officials to undertake on their own responsibility.

The work to be done was often as considerable in extent as it was complicated in character. Information would be given to the Military Staff, by telephone or otherwise, as to the number of officers and men belonging to a particular unit, the amount of baggage, and the number of guns, horses, road wagons, etc., for whom or for which transport was required from a given point of departure to a stated destination, and it would be for the Military Staff to make the necessary arrangements. Having calculated how much rolling stock of different types—coaches for personnel, wagons for guns, cattle-trucks for horses, and so on—would be required, they would proceed with the drawing up of time-tables indicating, not alone times of departure, of passing intermediate stations and of arrival at destination, but the time at which the empty stock was to leave a given depôt for the loading station, and the time at which the unloaded stock should afterwards be returned to the company on whose lines the traffic originated; though every effort would be made to ensure, if possible, that the rolling stock was utilised for military traffic in the reverse direction, this arrangement being one that, where and when it could be carried out, allowed of considerable economies being effected.

Calculations as to the amount of rolling stock required would have to be supplemented by precautions directed to ensuring that the stock selected would be able to pass over the lines of all the companies concerned in the move. The corridor coaches of one company, for instance, might be too large to pass over the lines of some other company, and it would thus be necessary to arrange that none of the stock to be made use of on particular routes exceeded certain dimensions.

In addition to this working of the rolling stock, many subsidiary engine-movements had to be provided for. Whereas, for instance, the rolling stock of a loaded train may generally be run for any reasonable distance, the running capacity of a locomotive is not inexhaustible. There was, also, the consideration that the hours of the engine staff must be kept within certain well-defined limits. So, in many instances, it would be necessary to arrange for an exchange of engines at junction stations when the train passed from one line to another. Should it be possible for the engine to proceed beyond the boundary of its owning company, pilot drivers would have to be provided to act as guides in respect not only to signals but, also, to gradients, curves, etc., over sections of railway with which the driver of the train coming from another line could not be familiar.

Then, in passing the engine of one company on to the system of another company, special regard would have to be paid to the vital questions of weight and gauge. An engine belonging to one company might, for instance, be too heavy to pass over a bridge, or have a chimney too high

to go through the tunnels, of another company. Alternatively the engine selected for a certain train would have to be equal to drawing it up a heavy gradient to be surmounted *en route*. Matters of detail such as these called for most careful thought and consideration. In fact the whole " diagramming " of engines for military working was an important and highly complex task, only to be entrusted to the most experienced of officials.

If the proposed destination of the trains should be some place in the Eastern Counties, for example, single-line working might be involved, and the number of trains which could be run per hour would require to be limited, more especially owing to the need to allow for the return of the unloaded trains over the one set of metals. If it were necessary to exceed the said number, the balance would have to go by another route.

Nor was it an uncommon occurrence, once more in the Eastern Counties, that a certain station, situate in a sparsely-populated agricultural district, at which it was desired, for military reasons, that troops should detrain, did not offer the platform accommodation and other facilities necessary for dealing with the proposed traffic. Conditions such as these, on their being pointed out by the railway Military Staffs, frequently led to a change in military plans, the troops being sent, instead, to some more commodious station from which they would march to their destination by road.

When, finally, the Military Staff had prepared all the necessary time-tables, notices, etc., typed or printed copies thereof would be circulated among the officials responsible for gathering together in adequate numbers the various descriptions of rolling stock required, for the provision of engines, pilot drivers, etc., and for the working of the traffic generally.

It might be thought that the arranging of all these things would call for much deliberation, and especially so having regard to the possible consequences of any wrong step ; but the order for the move thus to be provided for might come through, and have to be at once worked out, at any hour not only during the day but, also, during the night, from 6 p.m. to 2 a.m. being often the busiest time in the whole twenty-four hours for the Military Staff.[1] Under normal conditions the head-quarters offices of the railway company might be closed when urgent orders of this type were received. Hence the need for having always on duty in the Military Department, and continuously on the alert, an expert staff capable of dealing instantly, and on their own initiative and responsibility, with troop movements of whatever magnitude the exigencies of the military situation might render necessary ; and so efficient did the railway " military " men become that, notwithstanding the complications involved and the extreme pressure at which things had mostly to be done by comparatively small staffs, anything in the nature of a hitch was, so far as can be ascertained, practically unknown during the war.[2]

[1] This was more especially the case in the frequent event of an enemy air-raid, when all the messages received by the company would pass through the Military Department.

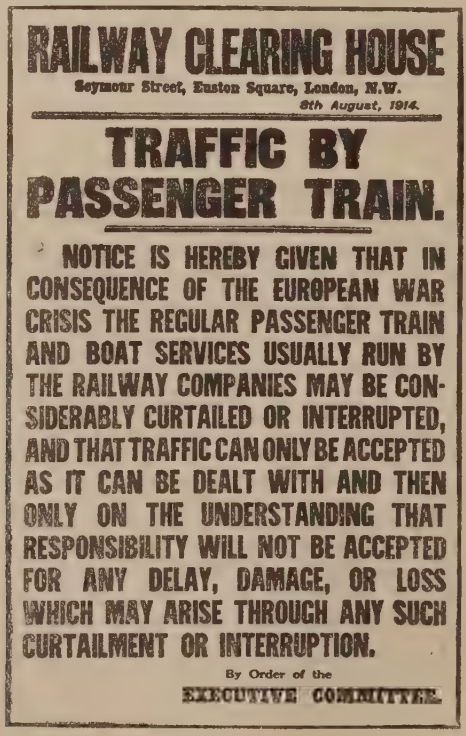
[2] Details concerning the extent of the transport of troops by rail during the war period will be given in later Chapters.

CHAPTER XV.

RESTRICTIONS ON TRAVEL.

If, shortly after the outbreak of hostilities, the delusion spread among a considerable section of the British public that they might look forward to a continuance of "Business as usual"—war notwithstanding—the fault was attributable, to a certain extent, to the railway companies.

It certainly was the case that on August 8th the Railway Executive issued a notice to the following effect :—



RAILWAY CLEARING HOUSE

Seymour Street, Euston Square, London, N.W.

8th August, 1914.

TRAFFIC BY PASSENGER TRAIN.

NOTICE IS HEREBY GIVEN THAT IN CONSEQUENCE OF THE EUROPEAN WAR CRISIS THE REGULAR PASSENGER TRAIN AND BOAT SERVICES USUALLY RUN BY THE RAILWAY COMPANIES MAY BE CONSIDERABLY CURTAILED OR INTERRUPTED, AND THAT TRAFFIC CAN ONLY BE ACCEPTED AS IT CAN BE DEALT WITH AND THEN ONLY ON THE UNDERSTANDING THAT RESPONSIBILITY WILL NOT BE ACCEPTED FOR ANY DELAY, DAMAGE, OR LOSS WHICH MAY ARISE THROUGH ANY SUCH CURTAILMENT OR INTERRUPTION.

By Order of the

EXECUTIVE COMMITTEE.

The initial mobilisation and the transport of the first Expeditionary Force were, however, soon over; the notices issued by the Executive Committee were regarded by the public mainly as a precautionary measure, designed to safeguard railway interests, and it looked to the Man in the Street as if the railway companies were already settling

down again to a study of his own important interests, so that, as far as he was concerned, things would indeed go on much as before.

This impression may have been strengthened by the fact that another notice, issued by the Executive Committee under date August 8th, 1914, concerning "General Availability of Tickets," said :—

> The public are hereby informed that until further notice all single journey and return tickets, also season tickets, are available by the trains of any railway running between the points for which the tickets are issued.

By breaking out at so inconvenient a date as August 4th, the war was responsible for a considerable upsetting of holiday arrangements ; but by the 17th of that month the railway services were spoken of in the Press as "almost normal," while on Saturday, the 22nd, the "full excursion and cheap ticket arrangements" which had been temporarily suspended were reported as having been resumed on all the railways—except the London and South Western, which, it seemed, was still busy, as it might well be ! with military traffic.

So, while the newspapers were eulogising the railway companies for the way in which they had "risen magnificently to the strain upon them," the British public were, on the said 22nd of August, making for the railway stations to continue their interrupted, or to start on their belated, holidays. The 8.15 a.m. from London Bridge and Victoria to Brighton had to be duplicated. So had the 10.15 a.m. from Charing Cross to Margate and Ramsgate. A special which left St. Pancras at 11.33 a.m. for Scotland was crowded, as, also, were the trains from Paddington for Devon and the Cornish Riviera. Within, in fact, eighteen days of the outbreak of war, the London termini had practically regained their holiday-time appearance, and "hardly without exception" the companies were said to be "doing good holiday business."

A week later the London and South Western announced that, from that date onward, its passenger train service would, with certain exceptions, and with liability to curtailment, be as advertised in the summer time-tables. Then, at the railway meetings in February, 1915, Lord Bessborough told the London, Brighton and South Coast shareholders that every requirement in regard to the quick and ready means of transport for troops and stores had been met "without undue disturbance of ordinary traffic," and Lord Claud Hamilton said at the Great Eastern meeting that, whilst the Government work had proceeded "swiftly, quickly and with the utmost secrecy," the general traffic of the railways had been subjected to "a minimum of interruption."

What reason for wonder was there if, in these circumstances, the Man in the Street really thought he could look forward, not alone to business, but even to pleasure, "as usual" ?

The Position in 1915.

While, however, the railway companies were thus seeking to interfere as little as possible with public convenience, and while the country

had still to realise that The Greatest War in History had begun, there were steadily increasing indications that further sacrifices of railway facilities would have to be made. The expanding proportions of the Government traffic; the greater volume of the goods traffic owing, among other causes, to the transfer to the railways of so much that had previously gone by sea, and the state of congestion on the railways which was more especially delaying the delivery of coal, combined to make it imperatively necessary that more of the passenger trains should be discontinued in order that the lines could be kept clear for dealing with this other traffic. The fact, also, of many thousands of men—including a large number in the operating departments—having left the railway service to join the Colours was seriously hampering the companies in their ability to meet the traffic demands by which they were faced.

Among the railway systems especially affected was that of the South Eastern and Chatham, which was carrying an exceptionally heavy amount of Government traffic under exceptionally difficult physical conditions. So, about the middle of January, 1915, the Managing Committee of that railway made considerable changes in their suburban services and issued a public notification in which they said:—

> In consequence of the very large and increasing demands made by the military authorities, it has been found necessary to reduce the passenger-train services. The Managing Committee regret the inconvenience to the travelling public, and hope that no further restrictions may be necessary. So soon as it is possible the cancelled services will be restored.

This particular restriction on the passenger services was due to the considerable extent of the "across-London" military traffic then passing. Like conditions led to the suspension of passenger traffic on various London lines during certain periods of the day. On the London and South Western the ordinary services were considerably reduced. Main-line traffic on the railways in general was also somewhat affected, though at this time the restrictions imposed related mainly to London. They represented, however, only a beginning in the way of interference with passenger travel. Much more in the same direction was speedily to follow, and the pious hope of the South Eastern and Chatham that no further restrictions would be necessary was doomed to disappointment.

All through the winter of 1914–15 congestion of the railway lines steadily increased in gravity. These conditions led to the appointment by the Railway Executive Committee of a sub-committee of General Managers, Superintendents and Goods Managers, charged with the duty of considering what exceptional measures should be adopted as a means of meeting the difficulties of the situation.

To the Superintendents on this sub-committee was remitted the question, "Would advantage accrue to the passage of goods and mineral traffic, and, if so, to what extent, if a diminution of the passenger service were effected?" For the better consideration of this subject, meetings were held of the Superintendents of no fewer than twenty-three railways,

and the possible curtailment of competitive train services was discussed with a view alike to facilitate the working of goods and mineral trains (thus decreasing the risk of congestion), to economise locomotive coal, and to allow of more trained men being available to work relief. In the result there was drawn up a programme of travel restrictions which included the withdrawal of 180 "competitive" passenger trains, dining-cars from over fifty trains and a number of sleeping-cars, together with the suspension (subject to exceptions) of excursion and other cheap-fare facilities in connection with race meetings [1]; fairs; agricultural shows; football matches; day and half-day bookings; guaranteed excursions; clubs and societies; annual conferences; field excursions of Naturalists' Unions; and walking or cycling tours; though it was proposed to retain in operation the reduced-fare arrangements which applied to week-end visits to camp stations by relatives and friends visiting the troops; period excursion bookings both at Easter and from April 8th to the end of June; workpeople visiting their homes at Easter and Whitsuntide; Saturday to Monday bookings; week-end (short-date and long-date bookings); market tickets; workmen's tickets (daily, weekly, and week-end); tourist tickets; emigrant tickets; fish-workers' tickets; commercial travellers' week-end tickets; theatrical companies; hunting arrangements; Boy Scouts; Boys' Brigades; choirs (professional); concert parties; Metropolitan Sports Clubs; orchestral companies; pupils of deaf, dumb and blind societies, Rifle and Miniature Rifle Clubs and shipwrecked mariners.

These revised arrangements, it was recommended, should be put into operation on Monday, February 22nd, 1915. They were approved alike by the sub-committee and by the Railway Executive Committee and the following announcement was made by the latter body:—

> It has been found necessary, in order to keep the lines as free as possible for military and naval traffic, still further to curtail the services of passenger trains and facilities in certain particulars which will be duly notified to the public. While the necessity for this curtailment is regretted by the railway companies, they feel sure that they may rely upon the forbearance of the travelling public, who may suffer some inconvenience.

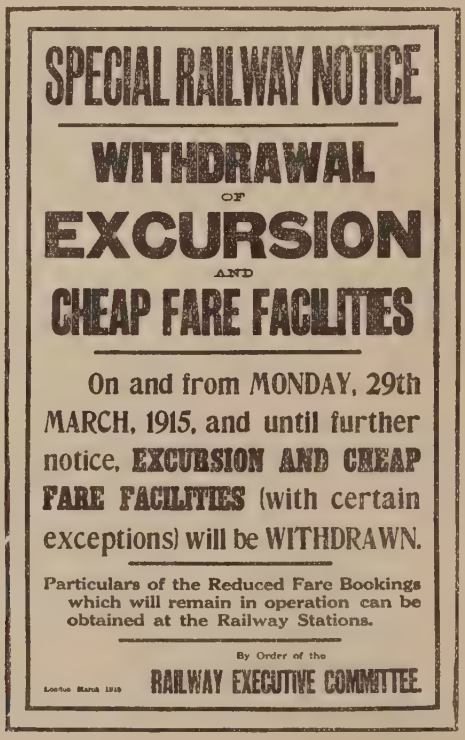
Each company dealt with its own services and sent out its own notices as to the changes to be made.

Within a month of these restrictions being introduced the work of revising the train services had to be begun over again in order to economise fuel, increase the number of men available for relief work, and liberate more men of military age.

It will have been seen that, while the alterations introduced on February 22nd led to the suspension of many excursion and other cheap-fare facilities, they still left a good number in operation. What was now agreed to, on the recommendation of the Superintendents, to whom the matter was again referred, was that on and from March 29th, 1915 (the

[1] Race specials were still to be run, though at not less than ordinary fares.

Monday before Good Friday), and until further notice, all cheap facilities should be withdrawn, subject to a curtailed list of exceptions which still included tickets for visits to camps, market tickets, workmen's tickets, tourist tickets, commercial travellers' week-end tickets, and cheap tickets for theatrical companies, music-hall artistes, choirs, concert and orchestral parties, rifle and miniature rifle clubs, shipwrecked mariners, and certain agricultural shows, while special concessions granted to Ambulance Associations and other bodies doing war work were also to remain in operation.



SPECIAL RAILWAY NOTICE

WITHDRAWAL
OF
EXCURSION
AND
CHEAP FARE FACILITIES

On and from MONDAY, 29th MARCH, 1915, and until further notice, EXCURSION AND CHEAP FARE FACILITIES (with certain exceptions) will be WITHDRAWN.

Particulars of the Reduced Fare Bookings which will remain in operation can be obtained at the Railway Stations.

By Order of the
RAILWAY EXECUTIVE COMMITTEE.

London March 1915

These proposals were duly concurred in by the Railway Executive, which issued the following announcement on March 24th :—

The Railway Executive Committee have been reluctantly compelled to cancel as from Monday next the issue, with a few exceptions, of all cheap bookings. The necessity for this step may be summed up under three headings :—

1. The fact that the large works employed in the production of ammunition and ordnance will not be closed as usual during the Easter Holidays, and that the collieries are expected to be working nearly full time. As a result, the railway companies will have to run a full service of goods and mineral trains.

2. The large number of men who have left the railway service to join the Colours, the great majority of whom it has not been possible to replace without having a retarding effect upon recruiting.

3. The necessity for keeping a large number of men, engines, and vehicles constantly in readiness for naval and military purposes.

Arrangements will be made after the holidays for issuing cheap tickets to enable families and relatives to visit men in camp at the various camp centres, and particulars of other cheap facilities which will be granted can be obtained upon application at the various railway stations.

Taking the total volume of the holiday traffic, under these conditions, at Easter, during the summer, and, also, in August, it was found that the withdrawal of excursion trains had much less effect than had been anticipated. In the case of an apparently large proportion of holiday-makers, the difference between the excursion fare and the ordinary fare was, apparently, not sufficient to keep them at home. Having made up their mind to take a holiday they did so, the higher cost of the railway journey notwithstanding; though this figure would, in most cases, probably bear only a small proportion to the entire cost of the holiday. Still less would it deter the considerable number of people to whom the war had brought increased earnings or greater profits. One had to allow, also, for the visits to holiday resorts at home of many persons who in peace time would have gone abroad.

While, therefore, the special excursion trains did not run, many of the ordinary trains were crowded, if not overcrowded, and some of those leaving London on Friday or Saturday nights in August had to be run in four or five parts. The holiday traffic of 1915 was, in fact, still so large that, in dealing with all the difficulties of the position in which they were placed, the companies did not gain from the travel restrictions then already imposed anything like the advantage they could have desired.

Closing of Stations.

During the course of 1915 a number of stations or halts on the South Eastern and Chatham, the London and South Western, the Midland, the Great Northern, the Highland and various other railways were closed in order both to facilitate the traffic and to allow of more men joining the Colours.

This policy was developed on a much more extensive scale in 1916.

A group of suburban stations on the South Eastern and Chatham (Walworth Road, Camberwell, Clapham, Wandsworth Road and Battersea Park Road), which had already been seriously prejudiced by tramway and motor-bus competition, were closed altogether in April, and Holborn Viaduct Low Level station (better known as Snow Hill) was closed on June 1st.

The Great Eastern caused consternation among its own patrons by

announcing, in April, that no fewer than nineteen suburban and country stations would be either entirely closed or closed for passenger traffic on and from May 1st. Strong protests were made alike through public meetings and otherwise. The company so far responded thereto that it postponed the enforcement of the notice until May 22nd, and, in the meantime, subjected the list of threatened stations to a further revision. One suburban and five country stations were struck off the list and one other country station was added; but with these modifications, reducing the number closed to fourteen, the original programme was carried out. On behalf of the company it was stated by the Chief Traffic Manager (Mr. W. C. May), in an interview with a Press correspondent, that the action they had taken was due to the requirements of the military situation, to the depletion of the staff, and to the desire of the company to release as many men as possible for service with the Colours, the closing of one station alone—Bishopsgate—liberating no fewer than twenty-five. On the other hand the selection of the stations to be closed had been influenced by the availability of alternative means of communication, so that the extent of the public inconvenience might, as far as possible, be reduced to a minimum.

In June, 1916, the London and South Western closed two stations in the London district, discontinued the use of their platforms at two joint stations, and cancelled one of their local services.

Once more, however, this closing of railway stations was done on quite a small scale as compared with what was to follow.

Restaurant Cars.

A further reduction was made, also, in the early part of 1916, in the running of restaurant cars.

The advantage conferred by these cars on the travelling public was undeniably great. They had contributed in a material degree to depriving long railway journeys of their possible discomfort, and there was naturally a reluctance on the part of the railway companies to put them out of service if this could possibly be avoided. Even allowing, however, for the further substitution of women for men as attendants, the running, maintenance and repair of such exceptionally heavy and specialised stock involved a good deal of work which could not be done by women, and there was room for the suggestion that men engaged on this work would be better employed either in themselves fighting for the great causes at issue or in acting as substitutes for other railwaymen, enabling them to join the Forces.

From an operating point of view the cars offered the additional disadvantage that, being such heavy vehicles, and duplicating to a certain extent the train accommodation provided for the passengers using them, their running necessitated either the employment of heavier engines or the making up of a restaurant train with a smaller number of passen-

ger coaches. In this way the companies did not get the best use either of their engine power or of their ordinary rolling stock; and, though this might not have been a material consideration in peace-time as against the compensating advantages for railway passengers, it did constitute a factor which could not be overlooked when there was urgent need for a revision of traffic conditions. By no longer running the restaurant cars it would, in fact, be possible either to use less powerful engines or to add such a number of passenger coaches that one train might, in some instances, be made to serve the purpose of a second train, thus saving one engine and the work of its crew.

In the circumstances it was inevitable that the companies would have to reconcile themselves, however reluctantly, to the need for imposing on the much-favoured railway travellers a still further sacrifice, in the national interests, of their personal comfort; and in April, 1916, the London and North Western took the step of announcing that, on and from May 1st, all breakfast, luncheon, tea and dining cars then running on its system would be discontinued. "Cold luncheon baskets," it was added, "will be served as far as possible to passengers requiring them in the principal trains on which luncheon and dining cars have previously run." The Great Western withdrew, on the same date, their restaurant cars from all services which might be regarded as competing with the London and North Western, while in keeping, also, with the withdrawal of the cars from the West Coast route to Scotland (following on the action taken by the L. & N.W.), the restaurant cars were suspended on the East Coast route between London and Scotland, but not, at that time, as regarded services in which the North Eastern and the North British were alone concerned. The Caledonian joined with the L. & N.W. in withdrawing the restaurant cars from the West Coast route though it continued to run these cars on some of its other services in Scotland. The Great Northern discontinued its restaurant cars alike in local and in through services.

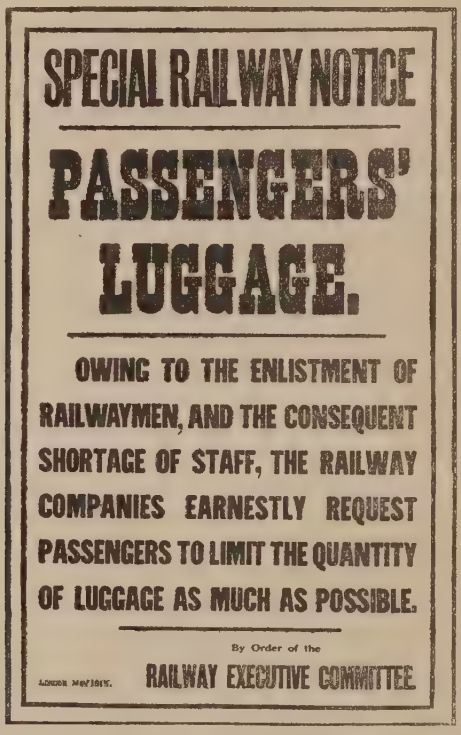
It will be seen that on this further occasion the withdrawal of restaurant cars was still only a partial one, a certain proportion of those previously running being still left; but among other traffic advantages at once gained from the action taken was the combination, in a number of instances, of two trains, one of which had hitherto been a relief to the other, following it at a very short interval.

Tourist Tickets.

Among the exceptions made to the suspension of cheap-fare facilities in 1915 was one in favour of tourist tickets. Early, however, in April, 1916, it was announced that the issue of tourist tickets would be suspended from May 1st to September 30th, inclusive. In September came the intimation that no more tourist tickets would be available for the duration of the war.

Passengers' Luggage.

In May, 1915, the Railway Executive Committee issued the first of several notices in regard to passengers' luggage.



SPECIAL RAILWAY NOTICE

PASSENGERS' LUGGAGE.

OWING TO THE ENLISTMENT OF RAILWAYMEN, AND THE CONSEQUENT SHORTAGE OF STAFF, THE RAILWAY COMPANIES EARNESTLY REQUEST PASSENGERS TO LIMIT THE QUANTITY OF LUGGAGE AS MUCH AS POSSIBLE.

By Order of the

LONDON MAY 1915. RAILWAY EXECUTIVE COMMITTEE.

As this request did not have much effect on the average railway passenger, there was issued in December, 1915, a further "Important Railway Notice" in which it was said :—

The Railway Companies are experiencing increasing difficulties in dealing with Passengers' Luggage, and Notice is Given that they may not in all cases be able to find Staff to deal with it at Holiday or other busy times.

Passengers should, therefore, Strictly Limit the quantity of Luggage and be prepared, if necessary, to make their own arrangements for handling it.

A year later an actual limitation was to be imposed on the amount of luggage a passenger could take by train.

Holiday Traffic in 1916.

Notwithstanding the reductions in train services, the withdrawal of excursion bookings, and the almost complete suspension of cheap travel facilities in general, the holiday traffic remained at a high level throughout

1916, being curtailed in only a comparatively minor degree by the restrictions imposed.

At Easter it was distinctly heavy. Many of the trains had to be strengthened or duplicated, and even then they were often overcrowded. This was so in the case not only of the Southern and South-Western seaside places specially favoured at Easter but, also, of many inland resorts and country districts, which seemed to attract an even larger proportion of holiday-makers than usual. Some falling off there was in the long-distance journeys, though this was more or less made up for by the crowds who took short-distance trips and by the large number of people who, in the absence of the customary excursions, devoted their holiday to visiting relatives or friends.

Still further discouragement was offered to the holiday-makers in June, when the Whitsuntide Bank Holiday was, by Royal Proclamation, postponed until Tuesday, August 8th, Mr. Asquith having announced in the House of Commons on May 30th that the Government thought it necessary in the national interest that the general Whitsuntide holiday and any special local holidays should be deferred in the munition areas until after the end of July. Thereupon the Railway Executive Committee announced that, inasmuch as Monday, June 12th, would not be a Bank Holiday, the trains would be run on that day "in accordance with the ordinary service now in operation." Most of the railway companies cancelled any arrangements they had made for strengthening or duplicating their ordinary trains. Yet once more there was much overcrowding by people who had either made, earlier in the year, holiday arrangements for Whitsuntide which they could no longer cancel, or, having the means and the leisure, were indisposed to forego the holiday they had promised themselves. On the Brighton line, especially, many of the trains had to be run in duplicate. Records taken on all the controlled railways for the month of June showed an increase in passenger-train receipts of not less than 18 per cent. as compared with the corresponding month of 1913.

In June and the early part of July various attempts were made to bring pressure to bear on the Government and on the railway companies —by questions in the House of Commons, through the Press and the Board of Trade, or by the British Health and Holiday Resorts Federation— to secure the restoration in August of excursion facilities and tourist tickets. The railway companies met these efforts by an intimation that, what with their depleted staffs, their coal and other difficulties and the increasing proportions of the Government requirements, it would be as much as they could do to handle the traffic they already expected to have to deal with in August, without any increase in its extent by a return to reduced fares and greater facilities. As for the attempt to influence the Board of Trade, it was replied on their behalf that in this matter they were in the hands of the Railway Executive, and had to be guided by that body.

On July 13th came the announcement by Mr. Asquith that the August

Bank Holiday—which should have been observed on Monday, August 7th, and been followed next day by the delayed Whitsuntide Bank Holiday—would, in turn, be postponed. "In the opinion of the Commander-in-Chief," said the Prime Minister, "there must be no slackening of output even for a moment. I have, therefore, to make an appeal to the patriotism of the workers of the country and the public generally again to postpone their holiday in order that the attack which has so brilliantly begun may be carried through to a triumphal conclusion."

The effect of this appeal, even in combination with the continued suspension of excursion fares and other cheap-travel facilities, was comparatively limited, judging from the probably typical experiences of the Great Western, concerning which the "Great Western Railway Magazine" for September, 1916, said that the number of passengers on that line during the fortnight ended August 5th, as compared with the corresponding period in former years, showed a noticeable increase rather than any decrease. Numerous divisions of the through expresses were necessary, notably on the West of England route. It was further said:—

> The Cornish Riviera "Limited" express left Paddington in three sections on eight occasions during this period, conveying a daily average of nearly 1,400 passengers, a record being reached on Saturday, July 29th, when the passengers numbered 2,027. The passenger traffic throughout the Great Western system was abnormal, and the efforts of the depleted staff were severely taxed by the quantity of luggage to be dealt with, the number of packages taken by individual members of the public showing no general diminution. The assistance of men from several other than the Passenger Departments was necessary and a number of clerks acted as emergency porters.

From Blackpool it was reported that in the second week of August all available sleeping accommodation was occupied, and that the holiday prospects were "surprising, incredible and amazing"; though they should have been less astonishing in view of the substantial earnings of so many of the Lancashire and Yorkshire people as the result of war manufactures and the consequent ability of well-to-do wage-earners and profit-makers to disregard the mere difference between an excursion fare and an ordinary fare when they had decided that, whatever happened, they must still have their holidays.

The British Armies in France.

Down to the autumn of 1916 the action taken from time to time to impose restraints on railway travel had been based mainly on such considerations as the depletion of railway staffs; the desire to release still more men for service with the Colours; the need for keeping the lines as free as possible for Government traffic; and the necessity both to economise in coal and to secure the most efficient employment of engine power and rolling stock. A fresh set of conditions, and one more imperative than any of those experienced before, was now to arise in the increasing urgency of the demands that more engines, more rolling stock and

more railway personnel should be sent to France to meet the transport needs of the British Armies on the Western Front.

In seeking to respond to these necessities as far as circumstances would permit, the Executive Committee concluded that, whilst any reduction of the transport facilities either for Government or for commercial traffic would be impracticable, there was scope for imposing further restrictions on passenger travel at home in the interests of our troops overseas.

Taken as a whole, the passenger traffic—apart from military moves—carried by the British railways in 1916 was in excess even of that carried in the record year of 1913. This increase was certainly due, in part, to the large numbers of workers who travelled by train between their homes and the munition factories, and, in part, to the numerous journeys made by persons travelling on Government business; but after every allowance had been made for all such considerations as these there was evidence of a continued large volume of pleasure travel—or "joy riding," as it was called—which had no bearing on either the World War or the nation's business and was hampering the railway companies in their efforts to meet the needs alike of the one and of the other.

Experience had shown, however, that this class of travel could not be kept down sufficiently by any such means as the companies themselves were able to enforce. In September the Ministry of Munitions suggested to the Executive Committee that something more might be done to provide locomotives for the use of British troops overseas by reducing still further the existing passenger services; but the Executive Committee replied that there was little prospect of a real improvement in the situation short of steps being taken in the direction of prohibiting travelling. Not only was this suggestion then already warranted, but further evidence in support of it was afforded by the action decided on later in the year.

One of the most imperative needs of the British Forces in France at this period of the war was for the 370 locomotives concerning which more will be said later on, and, towards the end of November, the necessity for the provision of this number of engines was especially impressed on the Executive Committee by Sir Guy Granet, then Deputy-Director-General of Military Railways, whose representations were shortly afterwards supported by a formal request from the Army Council that the railway companies would come to the help of our Armies in France in the matter of providing transport there for men, materials and supplies.

As a railway manager and himself still a member of the Executive Committee, Sir Guy Granet recognised the difficulties of the position in which his colleagues on that body would be placed in seeking to impose—by virtue of the limited powers the railway companies then possessed—such restraint on passenger travel as would allow of the liberation of the desired number of locomotives. He accordingly made representations to the President of the Board of Trade which led that Minister to

request the Executive Committee to report to him what steps it would be necessary to take to enable the railway companies to meet the said requirements.

The report asked for took the form of a Memorandum which, drawn up by Sir A. Kaye Butterworth at the request of the Executive Committee and approved by that body, was submitted to the President of the Board of Trade on December 2nd. The proposals it contained related both to passenger travel and to goods traffic; but only those concerning the former will be dealt with in the present chapter. They were put forward under two heads—(1) those requiring Government sanction, and (2) those that could be carried out by the railways without Government assistance.

Included in (1) were the following:—

Passenger train services to be considerably curtailed in order to liberate engines. Much had already been done in this direction, but there was the possibility that curtailment on the scale now contemplated would bring the railway companies into conflict with landowners, local authorities or individual traders with whom they had entered into agreements in respect to the running of trains or the provision of facilities they might now find it desirable, in the public interests, to discontinue.

Fares to be substantially increased in order to deter travelling. Under the Cheap Trains Act, 1883, railway companies which failed to provide "a due and sufficient proportion of accommodation for passengers at one penny per mile" were still to pay Passenger Duty in respect to fares in excess of that amount. In later Acts of Parliament the charging powers in respect to third-class passengers were expressly limited to one penny per mile.

Certain branch and secondary lines to be closed, with a view to releasing rolling stock or railwaymen. Such closing, unless sanctioned by the Government, might constitute a breach of undertakings originally entered into as conditions for the acquiring of land or otherwise. Alternatively, the branch or secondary lines to be closed might either be jointly owned or belong to independent companies and be leased to, or worked under agreement by, the operating company.

The practice of running mixed trains to be extended. Here, again, more rolling stock and personnel would be set free; but railway companies may not run mixed trains (i.e., trains partly for goods and partly for passengers) without the permission of the Board of Trade.

Express trains to be decelerated. This would allow of heavier trains being hauled, but existing arrangements with the Post Office in regard to the conveyance of mails would be affected by the slower running.

Reduction of leave to all branches of H.M. Forces serving in this country. There had been an especially great expansion in the week-end leave to men under training in the different camps. On the London and South Western, for instance, the average number of troops brought to London every Friday or Saturday (many of them for destinations beyond London), and taken back to their camp on Sunday or Monday, during the period from September, 1914, to December, 1916, was 16,500. The conveyance

of this number of men involved the running of from twenty to thirty special trains in each direction on days when, generally speaking, the strain upon the available traffic facilities was especially heavy.

Reduction of Sunday trains. Still fewer trains, it was suggested, could be run if the Post Office would discontinue Sunday delivery and collection outside London.

Limitation of free luggage to a weight below the statutory amount. In May, 1915, the Railway Executive Committee had issued, through the Railway Clearing House, a poster which said: "Owing to the enlistment of railwaymen and the consequent shortage of the staff, the railway companies earnestly request passengers to limit the quantity of luggage as much as possible." Such limitation was especially desired in order that women porters, who could not be expected to handle heavy boxes, might be more generally substituted for men; but the earnest requests of the railway companies had had only a limited effect on passengers, and it was now proposed to resort, by Government authority, to compulsion in place of voluntaryism.

Proposals specified in (2) as not requiring Government sanction included discontinuance of (*a*) the duplication of trains, as far as possible; (*b*) the running of special trains in connection with sporting events; (*c*) the provision of private saloons; and (*d*) the running of slip and through carriages. The further curtailment of dining and sleeping cars and the abolition, though still with certain exceptions, of cheap fares were also proposed.

Prior to the forwarding of this Memorandum to the President of the Board of Trade the Executive Committee had, on November 22nd, as a preliminary measure and in order to be prepared for any action they might be authorised to take, decided that the Superintendents should be asked to reconsider the whole question of the restriction of passenger-train services with a view to saving engines and men, and (1) report whether, under existing circumstances, everything possible had been done in the way of restricting passenger-train services; (2) consider what steps should be taken still further to reduce the number of persons travelling; and (3) make recommendations, and report the approximate number of engines and men it would be possible to release from passenger-train working if effect were given to them.

These various questions were considered at a meeting of Superintendents, representing twenty-four railways, held at the Railway Clearing House on December 26th, and the recommendations then drawn up and submitted to the Executive Committee for consideration at its meeting four days later became, in effect, the working details, in regard to passenger-train fares and traffic, of the suggested programme sent by the Executive Committee to the President of the Board of Trade, and subsequently approved by him in all its essential features.

Within, however, two days of the Memorandum being forwarded, Mr. Forster, Financial Secretary of the War Office, had (December 4th) made an announcement in the House of Commons which showed that the

Government had then already decided to adopt the policy of further restrictions on travel. The demands, he said, upon the railways to supply personnel (especially drivers), rolling stock and locomotives for use in France were so great, and the railways at home were so short-handed, that it had become necessary to curtail very considerably the facilities for railway traffic (goods and passengers) throughout the United Kingdom, the working being reduced to war essentials. The general public would be called upon to make sacrifices in this matter, and, on the understanding that this was done, and that, for example, munition workers would cease to enjoy special facilities for their week-end leave, the soldiers at home would be called upon, as their contribution towards the needs of the situation, to give up their week-end leave and their Christmas leave.

The proposal that soldiers at home (as distinct from those from the Front) should give up their Christmas leave aroused so much adverse criticism in Parliament and in the country that on December 14th, Mr. G. H. Roberts, Parliamentary Secretary to the Board of Trade, stated in the House of Commons that the War Office had decided to grant Christmas leave to the same proportion of the troops in this country as in 1915. There was, nevertheless, a general abandonment, from the end of 1916, of the week-end leave to soldiers at home. Withdrawal of the special week-end travel facilities hitherto granted to munition workers was afterwards made the subject of a compromise which will be referred to in Chapter XVII.

Christmas and New Year Holidays.

When the proposals for travel restrictions on an unprecedented scale were first suggested the idea was entertained of bringing them into effect almost at once, so that they would apply to the Christmas and New Year Holidays. For various reasons it was not found practicable to make them operative before January 1st, 1917; but in the meantime action was taken in various directions with a view to relieving as far as possible the inevitable strain during the Christmas season.

Towards the end of November (1916) the public were informed that the arrangements for the collection and delivery of passengers' luggage and for the delivery of carted luggage would be suspended by all the railway companies as from December 11th, 1916.

On November 28th the Executive Committee sent to the Press a notice in which it stated that—

> Owing to the depletion of staff, the passenger-train services during the Christmas holidays will be greatly reduced in comparison with previous years. It is, therefore, necessary that the public should, as far as possible, refrain from travelling except for business purposes between December 20th, 1916, and January 3rd, 1917.

Concurrently with this notice, the President of the Board of Trade issued an announcement pointing to the fact that the increasing demands made by the war on the resources of British railway companies called

for the utmost economy in the employment of staff and rolling stock, and stating, in reference to the passenger service :—

While the conveyance of troops has thrown an enormous burden on the railways, civilian traffic has diminished little, if at all, and the time has come when every person proposing to travel by train should consider whether it is really necessary that the journey should be undertaken. The Government would be reluctant to take any steps in the direction of a general interference with railway travel, and the possibility of any such action may be made more remote if members of the public will individually bear in mind that every journey not of genuine necessity should be avoided in the interests of the country.

Shortly afterwards the Board of Trade sent out a further notice, as follows :—

CHRISTMAS TRAINS.
JOURNEYS OF REAL URGENCY ONLY.

The Board of Trade desire to urge upon the general public the necessity of avoiding all travelling by train at Christmas time.

No journey which is NOT of REAL URGENCY should be undertaken, and the public are warned that the passenger-train service during the Christmas Holidays will be greatly reduced in comparison with previous years, and that the Railway Companies cannot undertake to CONVEY PASSENGERS to ANY PARTICULAR DESTINATION.

Increased Powers for the Board of Trade.

An essential preliminary to the carrying out of the further series of restrictions now contemplated was the acquirement by the Board of Trade of additional powers by means of which that department would be enabled to make orders authorising the railway companies to do certain things which, as shown by what has already been said in regard to the Executive Committee's Memorandum, could not be done without Government sanction.

These additional powers were acquired by an Order in Council, gazetted on December 13th, 1916, which directed that the following should be inserted after Regulation 7A in the Defence of the Realm Regulations :—

7B.—(1) The Board of Trade may, for the purpose of making the most efficient use of railway plant or labour, with a view to the successful prosecution of the war, make orders for all or any of the following purposes, namely—

(*a*) for enabling the Board of Trade to take possession of any private owner's wagons and to use those wagons in such manner as they think best in the interests of the country, as a whole, on such conditions as to payment, use, and otherwise as may be provided by the order ;

(*b*) for enforcing the prompt loading or unloading of wagons, by making failure to load or unload in accordance with the order an offence ;

(*c*) for curtailing any statutory requirements as to the running of trains or affording other facilities on certain lines or at certain stations or for requiring the disuse of any such line or station, in cases where the curtailment or disuse appears to the Board of Trade to be justified by the necessity of the case ;

(*d*) for restricting or prohibiting certain classes of traffic (including the carriage of passengers' luggage) on railways either absolutely or subject to any conditions for which provision is made by the order ;

(*e*) for modifying any statutory requirements with respect to the maximum amount of passenger fares.

(2) If any person acts in contravention of or fails to comply with any of the provisions of an order so made he shall be guilty of a summary offence against these regulations.

(3) Any order may be made so as to apply generally to all railways or to any class of railways or to any special railway.

(4) Any order of the Board of Trade under this regulation may be revoked, extended, or varied as occasion requires.

Provision was thus made, by paragraphs (*c*), (*d*) and (*e*), for meeting the difficulties that would otherwise have been experienced in carrying out the proposals made by the Executive Committee for the attainment of the objects which the Government had in view.

Fares Raised 50 per Cent.

In accordance with the powers acquired by them under this new Regulation, the Board of Trade made two orders by which the railways under Government control were authorised, on and from January 1st, 1917, (1) to raise their fares by 50 per cent., and (2) to limit the weight of luggage they conveyed per passenger to 100 lb. The text of the official notice sent out was to the following effect :—

The Board of Trade have to-day made orders under Regulation 7B, of the Defence of the Realm (Consolidation) Orders, 1914, authorising the railway companies of Great Britain, on and after January 1st, 1917 : (1) to increase passenger fares by one half ; (2) to refuse to carry luggage exceeding a total weight of 100 lb. per passenger.

It is intended that these Orders shall be applied generally, but certain exceptions will be publicly announced later by the Railway Executive Committee.

The increase of passenger fares will not apply to : (*a*) workmen's tickets ; (*b*) season tickets ; (*c*) traders' tickets ; (*d*) zone tickets, where an arrangement for the issue of such tickets is in operation.

It should be explained that the increase in fares is not intended as a means of increasing the revenue of the railways, but is put into force solely with the object of curtailing passenger traffic, in order to enable the railway companies to comply with the urgent demands that have been made upon them for the conveyance of troops, munitions, and supplies, both in Great Britain and in France.

Board of Trade, December 21st, 1916.

On the same day that this announcement was made, the Minister of Munitions (Dr. Addison), replying in the House of Commons to a question asked by Sir Courtenay Warner, said :—

The increased tonnage in munitions has necessarily thrown greatly added burdens on transport facilities, both at home and abroad. After consultation with the President of the Board of Trade and the Railway Executive Committee, it has been decided, with a view to assisting in the rapid and effective provision of the requirements of the Director-General of Military Transport, to take from existing services certain locomotives, railway trucks, and a proportion of non-essential lines. Some privately-owned trucks will be required, and the owners are co-operating for this purpose. This necessitates a considerable curtailment of non-essential services, and the Government is satisfied that it can look confidently to the public cheerfully to put up with these restrictions.

Season Tickets to be Shown.

A variety of matters on which the railway companies could act without the express sanction of the Government had, in the meantime, been taken in hand. One of these led to a notice, issued by the Executive Committee, that on and from January 1st, 1917, passengers who were holders of traders' or season tickets would be required to produce them in exactly the same way as holders of ordinary tickets. Should they fail to do so they would be required to pay the full ordinary fare. This innovation was to have the double effect of (1) protecting the railways against fraud, which had increased concurrently with the employment

IMPORTANT RAILWAY NOTICE

TRADERS

AND OTHER

SEASON TICKETS.

NOTICE IS HEREBY GIVEN that, on and from 1st JANUARY, 1917, Passengers who are holders of Traders or other Season Tickets will be required to produce them in exactly the same way as holders of Ordinary Tickets, and if they fail to do so will be required to pay the full Ordinary Fare.

By Order,

THE RAILWAY EXECUTIVE COMMITTEE.

of so many women as ticket collectors in place of men, and (2) enabling the station staffs to deal better with the greater number of season-ticket holders which was certain to result from the fact that the increase of fares by 50 per cent. was not to apply to season tickets.

The New Restrictions.

Articles published in the daily Press and the railway journals had prepared the British public for the almost revolutionary changes in railway travel which were to be introduced with the New Year; but, now that the Board of Trade had made the aforesaid orders under Regulation 7B, the Railway Executive Committee was able to issue a formal announcement of the new programme of innovations, and this it did in the public notice reproduced on the next page.

In the carrying out of this programme there was comparatively little

interference with morning and evening week-day suburban trains, since these were serving the distinctly business requirements which it was desired still to meet as far as possible; but Sunday and mid-day or afternoon suburban trains were curtailed, while of express and trunk-

IMPORTANT RAILWAY NOTICE

NOTICE IS HEREBY GIVEN

that the following alterations in Passenger Train travel, as applying to the Railways in Great Britain, will come into force on and from 1st JANUARY, 1917:—

1. PASSENGER TRAIN SERVICES.
The Passenger Train Services will be considerably curtailed and decelerated. For details see the Company's Time Tables and Notices.

2. RESERVATION OF SEATS, COMPARTMENTS, &c.
The reservation of seats and compartments, and saloons for private parties, will be discontinued.

3. SLEEPING AND DINING CARS.
The running of Sleeping and Dining Cars will be further curtailed.

4. THROUGH COACHES.
The running of certain Slip Coaches and Through Coaches off Main Line Trains to Branch Lines will be discontinued.

5. PROHIBITION OF CONVEYANCE OF MOTOR CARS, CARRIAGES, &c.
Road Vehicles, such as Motor Cars, Carriages, Show Vans, &c., will not be accepted for conveyance by Passenger Train.

6. INCREASE OF FARES.
All Passenger Fares, except Workmen's Tickets (Daily and Weekly), Season, Traders' and Zone Tickets, will be increased by 50 per cent.

7. CANCELLATION OF REDUCED FARE FACILITIES.
Reduced Fare facilities will in certain cases be discontinued. See Announcements by individual Companies.

8. INTER-AVAILABILITY OF TICKETS.
Passengers holding Ordinary, Season, or Traders' Tickets covering points directly served by two or more Companies' Lines will be allowed to travel, for the throughout journey only, by any route so available.
In cases where Through Tickets have been issued and there is no direct through service a passenger will be permitted to complete the journey by a recognised alternative route.
These Arrangements will not apply to local residential services unless specially authorised.

9. LIMITATION IN WEIGHT OF LUGGAGE ACCOMPANYING PASSENGERS.
The Railway Companies will not undertake to give assistance in the handling of Passengers' luggage.
Subject to certain exceptions, the amount of ordinary personal luggage allowed free of charge will be 100 lbs., irrespective of the class of ticket held, and NO PASSENGER WILL BE PERMITTED TO TAKE MORE THAN 100 LBS. WEIGHT OF LUGGAGE BY TRAIN.

By Order,

London, December, 1916. THE RAILWAY EXECUTIVE COMMITTEE.

line trains in general there were comparatively few which escaped either withdrawal or reduction in speed. Many of the most-favoured expresses disappeared altogether from the time-tables. The principle of withdrawal was especially applied to avoid the duplication of equivalent train services; although one must remember, in this connection, that trains running between the same points by different routes do not neces-

sarily duplicate each other if they serve, also, a number of intermediate places, affording intercommunication between these places themselves and between them and the two termini. It was, however, found possible in such instances as these to take off a number of trains while still providing good alternative facilities for through journeys and, also, making adequate arrangements for intermediate travel, whether by the stopping of previously non-stop trains or otherwise.

Actual duplication of equivalent services by what in the pre-war period were avowedly competitive services was avoided by allowing passengers between, say, London and Birmingham to travel either by the London and North Western or by the Great Western on a ticket for either route. There was also adopted a system of traffic allocation under which, for example, passengers from London went by the West Coast route to Stirling, Perth, and destinations on the Highland Railway ; by the West Coast or the Midland route to Glasgow ; by the East Coast route to Edinburgh, and so on with other places or districts in Scotland. No serious inconvenience can have been caused to the average traveller by this adoption of a system which so obviously meant for the railways a saving alike of engine power, coal consumption, rolling stock and personnel.

In many instances one train took the place of two on the same system, the adoption of this course being especially assisted by the running of more coaches per train rendered possible by the withdrawal of many more of the restaurant-cars and sleeping-cars.

Under the new arrangements there was a considerable decrease in the number of trains run ; but in most cases, at least, travellers still had ample opportunity for making any journey that was really necessary. The companies also sought to reduce possible public inconvenience by concessions in regard to interavailability of tickets.

Slower running of express trains was designed (1) to permit still further of more coaches being run per train ; (2) to allow of a greater number of intermediate stops, and (3) to decrease the strain on the engines, thus effecting an economy in the use of coal.

The decelerations were numerous ; but the lengthening of the journey from (for example) London to Sheffield by ten or fifteen minutes ; Birmingham, Bristol, Leeds, York, Manchester or Liverpool by half an hour or thereabouts ; Holyhead by fifty minutes ; Edinburgh or Glasgow by about an hour ; and Aberdeen by an hour and a half, can hardly be regarded as an unreasonable prolongation of travel under war-time conditions.

Of stations and halts closed entirely or for passenger traffic (though, in the latter case, still kept open for goods traffic), the number was over 400, the reasons given for such closure being (1) release of staff for military service ; (2) release of locomotives for use in France ; (3) the taking up of rails for use in France, and (4) reduction in the traffic, the keeping open of the station or halt being no longer warranted. There was thus a very considerable advance on the much-discussed action of the Great

Eastern in May, 1916, in announcing the intended closing of nineteen, and in actually closing fourteen of its suburban and country stations. Among the individual companies there were four which, by the early part of 1917, had each closed, entirely or partially, more than fifty of their stations, for one reason or another, since the beginning of the war, namely, the Caledonian, 53 ; the London and North Western, 55 ; the North British, 60 ; and the Great Western, 74. On the Glasgow and South Western two stations were opened morning and evening for workmen's trains and closed for the remainder of the day.

The figures given are exclusive of the considerable number of stations which were closed on Sundays, mainly on account of the new restrictions.

In regard to the prevention of unnecessary travel, suggestions had been made in the Press that the tendency thereto should be checked by the introduction of a system of travelling permits ; but the adoption of this proposal would, among other disadvantages, have necessitated the setting up of complicated machinery, troublesome to work and involving, possibly, the employment of a considerable staff. Much time, also, would have been required to complete the organisation, with all its working details, and the position in France towards the end of 1916 made it imperative that action for meeting the needs of our Armies should be taken with the least possible delay. An immediate increase of ordinary fares by 50 per cent. was thus regarded as a much simpler method of procedure than any resort to an " administratively unworkable " system of travelling permits, and one that should serve the desired purpose of reducing very considerably the number of passengers, while still not interfering with such " business " travel as was represented by the exempted season tickets, traders' tickets, zone tickets and workmen's daily or weekly tickets.

Resort to this expedient recalled a proposal made by Mr. McKenna in his Budget speech on April 6th, 1916, that a tax of one penny should be imposed on all railway tickets costing from ninepence halfpenny to one shilling, inclusive, and an additional penny for every further shilling or part of a shilling. Great opposition to the enforcement of such a tax was offered, and six days later Mr. McKenna announced that the Government had decided to abandon their intention.

Between the proposal of April, 1916, and that of the following December there was, however, a fundamental difference. The tax would have been not only a revival of the old Railway Passenger Duty (which for many years was the subject of an extremely active agitation and was eventually abolished except in regard to fares of over a penny per mile), but a revival expressly designed for the purpose of raising revenue. " The yield from this source," said Mr. McKenna, " is expected to amount to £3,000,000 " ; while on giving his intimation that the tax would be dropped he said " it was with considerable reluctance that the Government gave up £3,000,000 of revenue." In the proposal that ordinary fares should be increased by 50 per cent. there was no suggestion of any design to raise revenue thereby. When Mr. Morton asked in the House

of Commons, " What will become of the money made out of these increased fares ? " Mr. Roberts replied, " It is not expected that any additional money will be raised. We contemplate a loss." Those who had opposed a tax on travel avowedly designed to produce revenue for the State could, therefore, consistently support an increase in railway fares for the purposes of the war and in the special interests of our Armies in France.

The cancelling of reduced-fare facilities still left a certain number of exceptions, including those conceded (under special conditions, in some instances) to naval, military and police forces ; munition workers (daily and weekly tickets) ; ambulance and kindred associations ; boys in training schools or ships ; workers travelling to camps ; concert, orchestral and theatrical companies, and music-hall artistes. Market tickets were to be reviewed and, where necessary, still issued. While, however, these *reduced* fares were retained, this was done subject to the proviso that when they were paid by the passenger—that is to say, when tickets were not simply obtained in exchange for a " warrant "—they were subject to the increase of 50 per cent. thereon no less than the ordinary fares. No increase was made in workmen's fares, and workmen's tickets to munition workers were still issued at existing rates.

Among the cheap-travel facilities cancelled were the week-end tickets for (1) munition workers, as foreshadowed by Mr. Forster ; (2) ordinary workers sent to another part of the country to carry out large contracts, and (3) commercial travellers. The principle on which these withdrawals were based was that the nation's business had become the only material consideration in matters of passenger travel, and that the tickets here in question did not come under such definition however great the appreciation of them from the point of view of pleasure or personal convenience.

A like fate was allotted to the reduced-fare facilities granted to parties of women workers on the land ; officials of the Royal Agricultural Society ; fruit-pickers, hop-pickers, and V.A.D. nurses (in uniform) when on leave, though the last-mentioned could still get their cheap tickets when they travelled on duty. Members of Rifle Clubs and Miniature Rifle Clubs had been specially exempted from the earlier excisions ; but they, also, were now classed among those who, from January 1st, 1917, would have to pay the full fare if they still wished to travel by rail.

The only suggestion of sentiment which the Executive Committee allowed itself in an otherwise severely practical programme was the continuation of cheap-travel facilities for poor children on holiday ; though even this concession may have been due, not to sentiment alone, but, also, to a patriotic appreciation of the need for rendering the rising generation better fitted to take the places, later on, of those who had fallen in the war.

Exceptions to the new rule that the amount of luggage per passenger, irrespective of class, must not exceed the free allowance of 100 lb. (payment for excess being no longer sanctioned) were made in favour of members of naval, military, and police forces ; commercial travellers

(who might take with them a maximum, free, of 2 cwt., 1st class; 1½ cwt., 2nd class, and 1 cwt., third class, no single package to exceed 112 lb. in weight [1]); passengers to and from the Continent; emigrants; ships' crews; theatrical companies; music-hall artistes; bands; orchestral companies; choirs and concert parties.

Public Protests.

Drastic measures for limiting the train services as far as possible to business requirements and discouraging or preventing "unnecessary" travel could not be expected to operate without producing various anomalies and inflicting hardship or inconvenience on individuals and particular classes. Protests were, indeed, made in such volume that Mr. G. H. Roberts, Parliamentary Secretary to the Board of Trade, told a deputation which waited upon him on January 14th, 1917, that the Board had been "inundated with complaints" concerning the 50 per cent. increase in fares. This particular deputation represented the Parliamentary Committee of the Trade Union Congress, the National Advisory Committee on War Output and the Engineering and Shipbuilding Federation. Another deputation, appointed by a conference held at the Memorial Hall, spoke for the Musicians' Union and the munition workers. In the House of Commons Mr. Roberts had to deal with questions asked on behalf of commercial travellers' associations (which were said to have presented many memorials to the Board of Trade), munition workers, patients travelling to convalescent homes, and others. The almost invariable reply given was that "the hardship involved in certain cases was greatly regretted, but it had not been found practicable to make concessions in favour of any particular classes or individuals." Mr. Roberts further reminded the House, on February 16th, that the measures taken had been dictated by "urgent national requirements."

Apart from these questions, the increase in fares and the greater restrictions on travel formed the subject of a debate in the House of Commons on March 8th, when Mr. Roberts replied in greater detail to the complaints and representations made. On the general subject he reminded the House that the Board of Trade had power under the Defence of the Realm Act to make the restrictions, the reason for which was, not the raising of revenue, but the reduction of travelling owing to the necessity to make provision for the Armies in France. The demands on account of those Armies were so great that it might, he hinted, be necessary to impose still further restrictions.[2] He recognised that the

[1] Under an arrangement made subsequently, commercial travellers' excess luggage above the weights stated could be booked through the Parcels Department at owner's risk or company's risk according to the class of traffic.

[2] On March 28th, 1917, Sir Robert Turnbull received on behalf of the Railway Executive Committee a deputation which appealed that consideration in the matter of railway fares should be shown to the health resorts of North and South Wales. Not only was Sir Robert unable to offer the deputation any prospect of a reduction in the fares, but he foreshadowed the possibility of a still further increase in them in the near future.

increased fares must fall unequally on different classes of the community, and that many cases of hardship must arise; but there was no other system at once simpler and more likely to attain the object in view.

Results of the Restrictions.

When, in the middle of January, 1917, the Board of Trade began to find itself, as said above, "inundated with complaints," the new President (Sir Albert H. Stanley) asked the Railway Executive Committee to inform him what had been the actual effect upon the railways—so far as the results then available might show—of the measures taken in respect to (1) the increase of 50 per cent. in all ordinary fares, (2) the reduction in train services, and (3) the cancelling of cheap week-end tickets; and a sub-committee of the Executive Committee was appointed to collect and collate the necessary information and draw up a statement on the general position, from the point of view of the railway companies.

The data obtained related to the experiences of the railways during the first fifteen days of January, 1917. In that period the number of passengers paying ordinary fares, as distinct from holders of season or workmen's tickets, showed a decrease of approximately 30 per cent. This, however, did not mean that the volume of traffic had fallen by 30 per cent. What had happened was that a large number of short-journey passengers who hitherto paid ordinary fares had now provided themselves with season or workmen's tickets, in order to save the 50 per cent. increase; and, when allowance was made for this transfer from the one type of passenger to the other, the net decrease in the number of passengers carried within the period stated was not more than about seven per cent.

Granting that the said transfer represented "business" or other "necessary" travel, one could not suppose that the remainder of the 30 per cent. included anything like the sum total of all the non-business and more or less non-essential travel (non-essential, that is, from the point of view of national interests) for which the railways still had to provide. It looked, therefore, as though large numbers of people had persisted in their "joy riding" in spite of decreased facilities and increased fares, and notwithstanding the appeal made to them that "every journey not of genuine necessity should be avoided in the interests of the country."

On the other hand one had to remember that the British public received no more than a week or two's notice of the changes actually introduced; that many of them must have made arrangements for the New Year which they found it needful or expedient to carry out, fewer trains, slower trains and higher fares notwithstanding; and that in regard to certain of the restrictions, such as the discontinuance of passenger trains, some of the companies adopted a progressive programme which was not to come into complete operation until March 1st, 1917.

The actual saving in passenger-train engines by the twelve largest companies was about 500; but this was less than an equivalent in traction power to the 370 freight engines first asked for and in course of dispatch abroad.

In respect to saving in coal consumption—which was one of the secondary purposes in view—particulars supplied by eleven of the largest companies showed for the first fortnight of January, 1917, as compared with the last fortnight of December, 1916, a decrease of 17,298 tons, or 11.50 per cent.

Of railwaymen liberated by the twelve largest companies, between the 1st of January and the 2nd of February, to join H.M. Forces, the number was 4,738.

In communicating these facts to the President of the Board of Trade, the Executive Committee further said that the difficulty of releasing the number of engines required had been accentuated by the fact that an abnormal number of locomotives were under or awaiting repair. The Ministry of Munitions had not supplied the necessary quantity of materials either for repairs or for renewals, and the workshop staffs were greatly depleted, with the result that the railway companies had been unable to keep their existing locomotive stock in proper repair or to carry out their regular programme of locomotive renewals. Consequently, the engines still available were being worked at very high pressure, and this fact, combined with the prospective further increase in munitions traffic during the year, made the locomotive problem even more acute. These conditions might, indeed, necessitate further reductions in the passenger-train services and the adoption of other means of restricting passenger-train travel. The report continued:—

> You will be aware that a great deal of traffic which was formerly sea-borne has, since the outbreak of the war, been thrown on to the railways, and this, together with the ever-increasing traffic in munitions, is severely taxing the capacity of the railways. The reduction in the number of passenger trains has, however, resulted in the freer movement of goods and mineral trains.
>
> The railway companies of Great Britain have supplied some and are at once prepared to find the remainder of the engines required for abroad requisitioned up to the present time; they have been enabled to do so by imposing restrictions on travel, and to relax those restrictions in any way would result in the inability of the railways to deal satisfactorily with the traffic.
>
> From observations which have been made the passenger trains now running are only sufficient to carry the traffic presenting itself. In this connection the holiday traffic during the present year is likely to become a very serious problem, as it is considered that the recent increase in fares will not deter the public from travelling in large numbers. The railways will not be able this year to give anything approaching the services provided in 1916, and the committee are considering what steps should be taken to solve this problem.

These results did not foreshadow the probability of much modification being made in restrictions which, though more drastic than any others hitherto enforced, had thus far done no more than effect a net decrease of seven per cent. in the total volume of passenger travel; show that a large number of people were still undeterred from travelling by even a

50 per cent. increase in fares ; and suggest, not only that the restrictions would have to be maintained if the purposes aimed at were to be secured, but that it might be necessary, in the near future, to impose still further discouragements on non-essential travel.

All the same it was found possible and expedient to make certain concessions.

The 1917 Holidays.

In March, 1917, the following announcement was made by the Railway Executive Committee :—

SPECIAL RAILWAY NOTICE

PASSENGER TRAVEL DURING EASTER HOLIDAYS, 1917.

NOTICE IS HEREBY GIVEN that the Railway Companies of Great Britain will not be able to supplement the scheduled Passenger train services during the Easter Holidays.

Passenger tickets will not be issued by the Companies' ticket Agents or at Town Booking Offices for travel between Wednesday, 4th April, and Monday, 9th April, both dates inclusive; between these dates tickets will be obtainable **ONLY** at the Railway Stations and the issue will be limited to the carrying capacity of the trains.

Tickets will not be issued in advance for journeys between the dates specified above.

By Order,

THE RAILWAY EXECUTIVE COMMITTEE.

In order still further to discourage travel, certain of the companies gave notice that through bookings to their own systems from other companies' lines would in many instances be cancelled during the Easter holidays, and that they themselves would book no passengers beyond junction stations, where persons wanting to go to destinations on the system of another company would have to book again, though they would be able to continue their journey only in the event of the train service admitting of this being done.

The notice issued by the Railway Executive Committee in March was supplemented by one sent to the Press by the Board of Trade, stating :—

The Board of Trade desire to urge upon the general public the necessity of avoiding travelling on the railways during the Easter Holidays. The public are warned that the passenger-train service during the holidays will be greatly reduced in comparison with previous years, and that it is of paramount importance that the operations of the railways should be reserved to the fullest possible extent

for essential war work. The Board further take this opportunity of stating, with reference to a number of requests which they have received for a suspension of the recent increase in passenger fares during the months of July, August, and September, that, in view of the heavy and urgent demands made upon the railways in connection with the war, there is no prospect that the concession desired can be given.

For the Whitsuntide holidays, which occurred in the last week of May, the same course was adopted by the railways as at Easter; but, although the trains were few in number and ordinary passengers had to pay ordinary fares plus the 50 per cent. increase, the genial weather at Whitsuntide (contrasting most strongly with the wintry conditions which prevailed at Easter) led to heavy bookings to holiday resorts, the capacity of many of the trains being taxed to the utmost.

Nor were extra trains run for the holiday travel in August, even the Scotch expresses being limited to single trains, instead of being run in two, three or even four sections, as would have been the case under normal conditions.

Yet the crowds at the railway stations in August were greater still than those dealt with at Whitsuntide. It was as though people who, from motives of patriotism, had refrained for two years from taking their usual holidays, felt that at the end of the third year of war they really must have a change or a rest, if only for the purpose—as might well be the case with many of them—of getting renewed vigour for their war-time activities.

Towards the end of October the Board of Trade made a further strong appeal to the public not to travel more than they could possibly help. The difficulties of the railway companies at that time were, it was declared, much more severe than at the beginning of the war. Many more than 500 locomotives had been sent abroad for the purposes of the war, and some thousands of locomotives were awaiting repairs which could not be undertaken owing to shortage of materials and labour. Over 160,000 men had been released by the railway companies for military service. Although the train services had been seriously reduced a greatly increased traffic was being dealt with by the companies. In these circumstances the Board of Trade desired again to urge upon the public the need for reducing to the utmost possible extent the calls on the railway companies involved by conveyance of passengers and goods. The Government, it was added, would be most reluctant to place any further restrictions on travelling by railway, but the ever-increasing demands on the railways might make such a step necessary unless the public willingly refrained from using the railways except in case of "absolute necessity."

So the train arrangements for the ensuing Christmas and New Year holidays were, in turn, subjected to what had now become the normal war-time restrictions. There was just one exception that was made. In 1916 Christmas leave for the troops was limited to ten per cent. of each unit, and even then the men who got leave were not to travel between December 22nd and 25th inclusive. Similar arrangements were made for 1917; but the War Office put in a plea for the conveyance at Christ-

mas and again at New Year of, on each occasion, an additional 18,000 men who had been sent home wounded and to whom it was desired that a holiday should be given before they returned to the Front. Arrangements were made accordingly.

Notwithstanding the reiterated appeals to the public that they should not travel, the Christmas traffic was again heavy, more especially on lines serving pleasure resorts on the South Coast, and great pressure was once more imposed on the depleted railway staffs in dealing with the rush.

The Situation in 1918.

Early in the year 1918 the transport problem still to be solved by the railways became even more acute than before.

In order that the situation may be perfectly clear, one may recall for a moment what had been done on two previous occasions.

The first of these was at the beginning of 1915, when all excursion bookings and reduced-fare facilities (with the exception in the latter case of those applying to H.M. Forces and certain auxiliary and other organisations) were withdrawn. Here the idea was that people were not likely to travel on pleasure if they had to pay the full fare; but this anticipation was soon found to be fallacious and the railways failed to get the relief they desired and, indeed, required.

The second attempted solution dated from January 1st, 1917, when all ordinary fares—that is to say, fares exclusive of those for season and workmen's tickets—were increased by 50 per cent. Though people might be willing to pay full fares even when on pleasure bent, it was taken for granted that they would not pay full fares plus half as much again.

For a short time after this 50 per cent. addition to the cost of travel there really was a slight decrease in the number of passengers carried; but the decrease was only temporary. Particulars worked out from the receipts (including those from season tickets) of some of the larger companies for the months of January and February, 1918, as compared with the corresponding months of 1917, showed in regard to the number of passengers carried (apart from those travelling free on warrants) increases ranging from 14·46 per cent. to 43·42 per cent. The number of passengers carried to one popular seaside resort during the Easter holidays of 1918 gave an increase of nearly 100 per cent. over the number for Easter, 1917. The figures for 1918 were, in fact, nearly equal to those for the Easter of 1913.

Incidentally, also, it was curious to find that, whilst one State Department, the Board of Trade, was making almost pathetic appeals to the public *not* to travel at holiday times, other departments were taking active measures to *encourage* such travel—the Ministry of Munitions (as will be shown more fully in Chapter XVII.), by a most generous distribution of reduced-fare vouchers among munition workers, and the Ministry of Food, by ensuring that those workers and other holiday visitors to seaside resorts should suffer from no lack of supplies, whatever the position of stay-at-home patriots might be. In the case of Blackpool,

for instance, the number of declaration forms received by the local Food Committee for the use of visitors during the Easter holidays of 1918 was no fewer than 100,000.

Conclusions that increases in fares did not tend materially to decrease the amount of travel, and that some more effective measures would have to be taken to bring about this result, were abundantly warranted by such figures as those given above; and, as it happened, there were special reasons in the early part of 1918 why these further measures should be taken.

In addition to a continuance of the conditions which had previously been given for restrictions on war-time travel, the spring of 1918 brought fresh needs in respect both to the provision of adequate and priority transport of food supplies and to the imperative need for economy in the use of coal. This last-mentioned necessity was attributable, not only to the fact that, owing to the diversion of so much coal traffic from coasting steamers to railways, the latter were having cast upon them a burden which was beyond their capacity, but, also, to the consideration that the sending by this country of large supplies of coal to France and Italy had become almost vital to the winning of the war by the Allies. Further curtailment of passenger traffic on the railways was among the various measures proposed as a means towards the attainment of the said economy, and the question that now arose was as to the form which the further restrictions should assume.

Increases in railway fares having been ineffectual in leading to any material reduction in travel, there was a revival of the idea that a system of "permits" for other than local or suburban railway travel should be instituted, and a sub-committee of Superintendents of the Line was appointed by the Railway Executive Committee with a view to seeing if a practicable scheme could be drafted. The conclusions arrived at were adverse to the proposal. It was felt that any scheme which might be tried, whatever form it assumed, was bound alike to be unwieldy and to take time before it would operate, whereas there was need for early if not for immediate action.

What the companies could do, under their existing powers, in the way of curtailing their services by withdrawing still more trains, reducing the speed of others, changing express trains into stopping trains, and limiting the number of carriages per train, they did do on and from May 1st. Concurrently therewith more stations or halts were closed either altogether or on Sundays, and late trains were started earlier to leave the lines open for goods traffic, which, again, was facilitated by the fact that the withdrawal of passenger trains left more engines available for the other branch of the service.

There were, however, various other measures which, though desirable in view of the conditions of the day, the companies would be unable to take without an extension of their existing powers, such as was now proposed, among them being some drastic changes in regard to the issue of season tickets.

CHAPTER XVI.

SEASON TICKETS.

One result of the 50 per cent. addition to all ordinary railway fares on and from January 1st, 1917, without the making of any advance in the cost of season tickets, was an immediate substantial increase in the number of the latter taken out by more or less regular travellers. Season-ticket rates had already been low—if not, in many instances, ridiculously low—as compared with ordinary fares; but, under the new conditions, the disparity became more marked than ever. Many people who had hitherto paid their fare regularly day by day now sought to evade the 50 per cent. increase by taking out season tickets instead, while other persons found it to their advantage to obtain season tickets for long or comparatively long distances even although they made the journey not oftener than twice a week.

This movement went on throughout the country in general; but in the autumn of 1917 an impetus on an altogether abnormal scale was given to the taking out of season tickets for places south of the Thames, or situate in the Thames Valley, as the result of the series of enemy air-raids on London in September and October in that year. Aliens, more especially, then resident in the East End of London, became panic-stricken, took to flight, and sought refuge for themselves and their families at Brighton, at Maidenhead [1] or neighbouring towns, or, to a less extent, at Bournemouth or elsewhere. Taking out season tickets, they travelled to London in the morning to do their business, but returned to their new homes in the afternoon or evening in order not to spend the night in a city they seemed to regard as no longer safe for their own precious selves. They crowded the trains to such an extent that regular travellers and *bona fide* residents of the invaded districts were put to the greatest inconvenience, while the South Coast or the Thames Valley resorts favoured by the refugees became congested areas of the most pronounced type. The whole position, in fact, speedily assumed the dimensions of a public nuisance; though it was one directly traceable to the travel facilities afforded by the railway companies, and especially so in regard to the issue by them of season tickets.

These dual conditions led, in the early part of 1918, to an exhaustive inquiry being made into the whole subject of season tickets; and various interesting facts, with which even railwaymen themselves had not

[1] There was one especially-well-patronised evening train to Maidenhead which became familiarly known to railwaymen as "The Palestine Express."

previously been acquainted, were disclosed as the result of certain figures obtained from those larger companies which, between them, issue the bulk of the season tickets in use on British railways.

It was desired, in the first place, to ascertain the numbers of season tickets taken out for different periods of availability—twelve months, six months, three months and one month—and for different distances—one to twelve miles, thirteen to twenty-five miles, and over twenty-five miles—during the months of January, April, June, August and October, 1917, as compared with the corresponding months of 1916. The figures, as a whole, without reference to distinctions in distances, showed that the percentages of increase in the total number of tickets issued in 1917 as against 1916 were—January, 27·2; April, 36·4; June, 25·6; August, 25·7; October, 30·7.

Definite confirmation was thus obtained of the fact that there *had* been a substantial increase in the number of season tickets. The returns obtained were then dissected with a view to ascertaining the proportion that short-period season tickets—those, namely, for three months or less—bore to the total number issued. The percentages in this respect were found to be as follows: January, 89·9; April, 94·8; June, 95·2; August, 95·0; October, 95·6. It was now established, therefore, that the bulk of the season tickets were taken out for short periods only; but the further question arose as to whether, and, if so, to what extent, there had been increases in short-period tickets in 1917 as compared with 1916. This was found to have been the case, the percentages of increases shown being—January, 28·6; April, 38·5; June, 24·9; August, 26·0; October, 34·3.

Comparing these figures with those showing the percentages of increases in all season tickets, as given above, one gets the following result:—

	January.	April.	June.	August.	October.
All Season Tickets .	27·2	36·4	25·6	25·7	30·7
Short-period Tickets .	28·6	38·5	24·9	26·0	34·3

Thus the increases in season tickets in general were practically accounted for by the increases applying to short-period tickets only.

The next point that arose was as to the respective distances for which these greater numbers of short-period season tickets had been taken out. So the returns were dissected afresh, in order to ascertain the proportion that the short-distance short-period tickets bore to the whole of those issued. Here the figures worked out thus:—

Distance.	January.	April.	June.	August.	October.
1–12 miles . . .	86·7	85·8	83·7	81·2	79·2
13–25 miles . .	9·1	9·6	10·3	11·3	11·09
Over 25 miles . . .	3·6	4·5	5·3	6·9	9·3

It was now proved, therefore, that while there had been a gradual decrease in the percentage of short-period tickets taken out for distances up to twelve miles, there had been a steady increase in those for longer

distances. These figures, however, related to number of tickets only, and it was a matter of much interest to ascertain what were the percentages of increase in the distances to which the tickets applied. This was done by comparing the mileage figures represented by the same class of tickets for the two years in question, the following increases on this basis being shown for 1917 over 1916 :—

Mileage.	January.	April.	June.	August.	October.
1–12 miles . .	27·4	37·7	24·7	22·5	22·8
13–25 miles . .	33·5	40·3	30·1	37·7	65·5
Over 25 miles . .	53·1	59·5	47·4	58·2	232·4

The special significance of the figures in respect to distances of over twenty-five miles for the month of October was, of course, accounted for by the flight from those air-raids on London which became especially active in the autumn of that year, the effect being greatly to increase the average distances for which short-period season tickets had been taken out.

Then there was the fact that, not only were ordinary season tickets issued at rates often exceptionally low, but there were special kinds of seasons which cost even less than ordinary seasons. Those known as "traders' tickets," granted to traders whose business with the railway company concerned amounted to a stated sum per annum, cost, approximately, 35 per cent. less than the corresponding seasons issued to smaller traders and the public in general. Some of the companies issued, mostly at about 10 per cent. below ordinary season-ticket rates, "family season tickets," which were obtainable by two or more members of a family resident in the same house ; and here there was a suggestion that the ties of relationship between the applicants were sometimes distinctly elastic. The South Coast companies had an arrangement under which the wives of season-ticket holders could get season tickets for themselves at half the ordinary rates, so that they could readily visit London for shopping purposes.

Season tickets at half the ordinary rates were granted to children under fifteen years of age, scholars, pupil teachers, students (medical, art or otherwise), apprentices, articled or junior clerks, and messengers when not over eighteen years of age and on production of a certificate from their schoolmaster, college or employer ; but this particular group of concessions escaped adverse criticism since the enforcement of full-rate charges upon these young persons would have involved either a restraint on their education or an undue tax on their earnings.

Many both of the low and of the still-further-reduced season-ticket rates had been conceded for the special purpose of inducing people to live in the suburbs or the outer suburbs of the great towns ; and, while the railway companies may have aimed thereby mainly at an increase of their traffic receipts, the results were, under normal conditions, of considerable advantage to the community in general. When, however, there came an urgent need for reducing travel on the railways to the lowest possible

proportions, it was inevitable that the whole subject of season-ticket rates and conditions should come up for review. It was felt that holders of these tickets should be discouraged from unnecessary travel no less than the purchasers of ordinary tickets; but the powers of the railway companies in dealing with the matter were then limited, while they were reluctant to throw undue difficulties in the way of people whom they might, by reason of the travel facilities they had offered, have persuaded to become genuine suburban residents within a certain radius. Early in 1918 the London, Brighton and South Coast Company did impose various restrictions with a view to checking the flight to Brighton; the Great Western suspended the issue of monthly season tickets to riverside stations, and announced that it would no longer issue tickets for a shorter period than six months, while the London and South Western abandoned the issue of reduced-rate seasons to the wives of full-rate season-ticket holders. Other companies also took action; but while none of them, with the exception of the South Eastern and Chatham, were under any statutory obligation to issue season tickets at all, they could not so far interfere with established custom as to withdraw seasons altogether. Nor were they in a position to grant a season ticket from A to B to one person while refusing it to another, since any such procedure on their part would have constituted an "undue preference" for which they might be called to account. Much was again said in the Press in support of a "travel permit" system; but this, in the opinion of many railway experts, would have involved delay together with many difficulties and complications, and the conclusion was arrived at that the conferring of wider powers on the Board of Trade as regards the conditions under which season tickets should be issued would be preferable.

It was under these conditions that, on April 27th, 1918, by an addition to the Defence of the Realm Regulations, made by virtue of an Order in Council, the Board of Trade was authorised to make regulations as under:—

1. For prescribing the conditions on which tickets may be issued and passengers carried, either generally or in specified localities, or for journeys exceeding specified distances, and for enabling priority to be given on railways to any passengers or classes of passengers, and for enabling railway companies to refuse to carry passengers, and to refuse access to stations or trains in order to give priority to other passengers, and to remove passengers obtaining such access without authority.

2. For removing any statutory or other obligation to issue season tickets, and for limiting the number of such tickets that may be issued by prescribing the person to whom or the conditions on which such tickets may be issued or renewed, subject to such exceptions as may be provided for in the order.

3. For the calling in and cancellation of season tickets of any description.

4. For restricting or prohibiting through booking facilities and the issue of return tickets.

Preferential treatment in favour, for example, of an established resident over a fleeing alien could thus be expressly legalised.

The next step taken was an announcement by the President of the

Board of Trade in the House of Commons, on May 9th, that, owing to the conditions of railway requirements at that time, the number of passengers *must* be reduced, and that he proposed to authorise the Railway Executive Committee to take, immediately, the following steps :—

To discontinue the issue or renewal of all season tickets which are issued at special reduced rates, except scholars', apprentices', and privilege season tickets issued by the railway companies to their employés. This will cover the issue or renewal of season tickets at specially low rates to members of the family of a season-ticket holder, of which a large number are in force.

To discontinue the issue of new season or traders' tickets which are applied for the first time, between London and places situated outside a radius of 12 miles from Charing Cross, except in cases where it is shown that travelling is necessitated by reasons of national importance.

To discontinue the renewal of any season or trader's ticket between London and places situated outside a radius of 12 miles from Charing Cross which were taken out for the first time since January 1st, 1917, except, again, where travelling is necessitated by reasons of national importance, and generally in cases in which the holder is *bona fide* a resident, although only a recent one.

To discontinue the issue of season tickets for periods of less than six months in cases in which the tickets cover journeys over 12 miles and the applicants do not already hold season tickets.

To discontinue giving refunds in respect of season tickets which have not expired, and which the holder desires to surrender to the company in return for an allowance for the unexpired period. This proposal will not apply in the case of the death of the holder of the ticket or in the case of the holder being called up for Government service, and follows on the proposal that season tickets for distances over 12 miles shall not be issued for periods of less than six months.

To increase the price of season tickets by 10 per cent. in the case of tickets covering distances up to 12 miles and 20 per cent. in the case of tickets covering distances of over 12 miles.

It was thus designed, among other things, to stop "family" tickets and "wives'" tickets; to suppress the rush-to-Brighton tickets and others of the same type; to discontinue the giving of refunds on unexpired periods (so that persons taking out a six-months season ticket for a sea-side resort, without any intention of using it for more than two months, would no longer be able to claim a refund on surrendering it at the end of the shorter period, and would thus be discouraged from what might be regarded as "unnecessary" travel); and to raise the price of season tickets (including traders' tickets) generally.

In support of his proposals, Sir Albert Stanley declared that interference with season tickets was warranted on the ground that people taking them out because of the 50 per cent. increase in ordinary fares had been able to indulge in any number of additional journeys without additional cost. He further said, in reference to the last proposal on his list :—

An increase in season-ticket rates is justified, not only as a measure to restrict travelling of the kind I have indicated, but also as a financial measure, as calculations show that under present conditions season-ticket travel is being carried by the railways at a loss.

While the proposed restrictions were generally favoured by railway-

men, there was a difference of opinion among them in regard to the increase of rates for season tickets. The view taken in some quarters where the whole matter had been made the subject of very close inquiry was that, while they did not dissent from an increase of 20 per cent. in the rates for tickets for distances over twelve miles, since persons who resided at this distance from their business might be regarded as in a position to pay more, they thought the rates for distances under twelve miles should remain unaltered inasmuch as it was within this distance that the vast majority of season-ticket holders who were city workers had, with the direct encouragement of the railway companies, taken up their residence. As against this latter argument it was suggested that even dwellers within the 12-mile radius should now be discouraged from taking out the season tickets which might tempt them to travel more than they did before, and that, having regard to the admitted lowness of the rates charged, holders of seasons within that radius might just as reasonably be called upon to pay more for them as people who paid their fare day by day. The remark made by the President of the Board of Trade, as quoted above, further showed that financial reasons were being kept in view by the Government (to whom, of course, the traffic receipts would go) no less than the desire to keep down the amount of passenger traffic.

Under the authority conferred upon them by the President of the Board of Trade, the railway companies proceeded to enforce certain of the restrictions spoken of, and they raised forthwith, on the basis indicated, the rates for any further season tickets renewed or issued by them. Season tickets for scholars, apprentices, etc., under eighteen years of age were to be charged on the basis of half the old rate (as before) *plus* the 10 or the 20 per cent. increase, according to distance. Traders' tickets were raised 20 per cent., and it was subsequently further arranged that the traffic qualification for a trader's season ticket should be increased from £300 to £500 per annum for each ticket issued, while the minimum distance for which such tickets were to be granted was raised from thirty miles to fifty miles.

Apart from what the companies could thus do under the authority or by direction of the President of the Board of Trade, there were various changes affecting their legal powers or responsibilities for which an Order under the Defence of the Realm Regulations was necessary, and a "Railway Season Ticket Order, 1918," was made by the President of the Board of Trade to the following effect:—

1. No railway company shall be obliged to issue season tickets.

2. A railway company may refuse to issue or renew a season ticket between any station situate within a radius of 12 miles from Charing Cross Post Office and any station outside such radius, provided that in determining whether or not a season ticket between such stations as aforesaid shall be issued or renewed to any person regard shall be had to (*a*) whether the ticket is required for travelling on business of national importance, (*b*) the place where the applicant ordinarily resides and the place where he carries on his profession, business, or occupation, and (*c*) whether the applicant is at the date of his application the holder of a season

ticket, and, if so, whether he first became the holder of a season ticket before January 1st, 1917.

3. A railway company may require an applicant for a season ticket or for the renewal thereof to answer in writing such questions as they shall require to enable them to determine whether a season ticket ought to be issued or renewed to such person, and no person shall knowingly make any false statement for the purpose of obtaining a season ticket.

4. If any person is convicted of obtaining a season ticket by means of any false statement, the railway company which issued such ticket shall demand the surrender thereof, and such person shall thereupon return such ticket to the company, and it shall be forfeited.

5. A railway company may refuse to issue a season ticket for a distance over 12 miles to any person who is not at the date of the application the holder of a season ticket except for a period of not less than six months.

6. A railway company may refuse to agree to allow any rebate or to make any repayment in respect of a season ticket surrendered for which it was issued except in the case of (*a*) the death of the holder, (*b*) the holder joining His Majesty's Forces or entering His Majesty's service, (*c*) a person in the service of His Majesty who is obliged to change his residence by reason of such service.

7. This Order shall take effect as from May 21st, 1918.

None of the travel restrictions imposed throughout the duration of the war provoked more criticism than those relating to season tickets. Resolutions of protest were passed by public bodies; the Press of the country had much to say on the subject, and deputations waited on the President of the Board of Trade, who, also, for some weeks was nightly bombarded in the House of Commons with questions suggesting grievances on the part of one interest or another.

The position certainly had been complicated by the introduction into a measure ostensibly designed to restrict unnecessary travel of proposals for increased charges admittedly intended to secure for the Government a higher revenue from the railways, on the ground that season tickets at existing rates did not pay. It was further complicated by a widespread assumption that the State authorities proposed to raise the price of season tickets *because* of the crowds of aliens who had flocked to the South Coast and the Thames Valley to escape the air-raids, whereas the financial proposals of the new measure applied to the whole country. Then, too, it was mainly by means of the restrictions in regard to season tickets beyond the 12-mile radius of Charing Cross that the alien flight from London was to be checked, the more so since those taking part in the flight were mainly of a well-to-do type who would not hesitate to pay a further 20 per cent. on season tickets—provided only that they were still left free to get them.

Other protests were based on representations that if it were, indeed, of vital importance to the interests of the nation that railway travel should be reduced to a minimum, the Government should itself set the example in curtailing the issue on so lavish a scale of warrants and vouchers by its various departments, instead of expecting that the sacrifices to be made should fall to so great an extent on season-ticket holders of whom the vast majority, at least, and allowing for a compara-

tively few exceptions, took them out as an adjunct to their daily occupation.

There were, also, suggestions that individuals might suffer if the railway companies were left free to say to whom they would or would not grant season tickets; but this had already been provided for by the President of the Board of Trade, who arranged that whenever a railway company considered that the granting or the renewal of a season ticket was not justified, they should, through one of their representatives, lay the matter before Mr. Honoratus Lloyd, K.C., from whose decision there was to be no appeal.

On the signing of the Armistice in November, 1918, certain changes were made in the further enforcement of the new regulations concerning season tickets. The restriction as to renewal between London and places outside a radius of twelve miles from Charing Cross was allowed to lapse. So was the one as to discontinuance of issue for periods of less than six months. On the question of refunds in respect to unexpired tickets, it was arranged that, while the principle of refunds, subject to a certain deduction, on the surrender of such tickets should be restored, the conditions on which this was done should, if possible, be made uniform, thus doing away with variations in the practice hitherto followed by different companies. As against, however, these concessions, the increases in the price of season tickets were to remain; no change was made in the special conditions affecting traders' tickets, nor was there any renewal of "wives'" and "family" season tickets.

CHAPTER XVII.

FREE OR REDUCED-FARE TRAVEL.

GOVERNMENT traffic on the railways, so far as passengers were concerned —and using the term as including all classes thereof who were either servants of the State or included in the list of specially-favoured institutions or classes—fell mainly into two groups, (1) those who travelled free, on *warrants*, and (2) those who travelled at reduced fares, on *vouchers*. In the case of the former, the railway companies took no direct cash payment, the cost incurred by them in affording the necessary travel facilities being, in accordance with the principle which had been adopted, charged to working expenses and recovered through the Government guarantee. In the case of the latter, they were able to add to their traffic receipts such fares as the holders of vouchers were alone required to pay thereon for their tickets.

FREE TRAVEL.

Of those who travelled free, on warrants, the vast majority were, of course, members of H.M. Forces ; and in regard to these the fact may be mentioned that they alone of all the various types of railway travellers under war-time conditions had a statutory right to be conveyed, not without payment of fares at all, but on reduced fares. This right was conferred upon them by section 6 of the Cheap Trains Act, 1883, which provided that " officers, soldiers and men " belonging to " the Forces " were, on production of a " route " for their conveyance, duly signed by an authorised person, to be carried by the railway companies, in the class of carriage specified, on such terms as might be agreed upon between the railway company and the public authority concerned, provided that the fares charged did not exceed three-fourths or one-half of the ordinary fares according to whether the number conveyed was below or above 150. The companies were, also, to carry 1 cwt. of personal luggage for members of the Forces travelling first class, and ½ cwt. for all others, free of charge, any excess to be paid for at not more than two-thirds of the rate charged to the public for excess luggage. " Public baggage, stores, arms, ammunition, necessaries and things," whether accompanying the Forces or sent separately, were to be conveyed at rates not exceeding " twopence per ton per mile " !

These, therefore, were the rates for the conveyance of the Forces which the railway companies would have been entitled to charge if, on the outbreak of war, the lines had not passed under the control of

the State, on the basis of a Government guarantee ; but, on this control being brought about, there was clearly a saving of much trouble by adopting the principle that members of the Forces, together with persons travelling on Government account, directly or indirectly, should do so on warrant, without payment of fare, the Government compensating the companies for any deficiency in their net receipts as compared with the basis year of 1913.

Thus it was that the Government departments eventually authorised to issue warrants for free travel, subject to these conditions, included the following :—

Admiralty, War Office and Air Ministry.—Naval, military and Air Force officers, non-commissioned officers and men travelling on duty ; members of the Women's Royal Air Force, on duty and when in uniform ; civil officers and men (including dockyard workmen) belonging to the Admiralty and naval establishments, when travelling on duty ; wives, widows and children of members of the naval, military and Air Forces, when entitled to be conveyed at the public expense, and members of the naval, military and Air Forces travelling on warrants endorsed "On repayment." No charge was to be made in respect either to personal luggage of the foregoing, up to the authorised quantity, or to Government baggage. Special trains on naval, military or Air Force Service were not to be paid for if ordered under instructions from the Admiralty or the War Office. Nor was payment to be made to the railway companies for conveying the corpses of members of the naval, military and Air Forces or of civilians (e.g., dockyard workmen dying when away from their dockyard, on detached duty) allowed to be carried at the public expense.

Board of Agriculture and Fisheries.—Flax Production Branch : cultivators and harvesters. Food Production Department : seasonal workers on land (i.e., persons who volunteered to assist in getting in fruit, hop or potato crops).

Home Office (Prisons).

Insurance Commission, National Health.—Ex-soldiers travelling for treatment.

Ministry of Labour.—Workpeople travelling under the Labour Exchange Act. Candidates for Queen Mary's Army Auxiliary Corps, and members of the same Corps when on duty and in uniform. Seasonal workers on the land.

Ministry of Munitions.—Military officers travelling in uniform. War Munition Volunteers and Army Reserve Munition Workers (the latter being soldiers released from the Colours to do munition work) had free travel to and from their place of employment, they having undertaken to go to any part of the country where, in the opinion of the authorities, their services might be most useful.

Local Government Board.—Belgian refugees. Belgian soldiers on leave from France.

Ministry of National Service.—Recruits called up for examination. Men examined on behalf of the Ministry of Pensions. Full-time officials.

Post Office.—Engineering and Stores Department Staff.

French soldiers, serving in the French Army, but whose families were in this country, had free transport, when on leave, from the port of embarkation in France to their homes in England and back to France. Free transport was also conceded to officers and men of the American, Belgian, French, Italian, Japanese, Russian, Rumanian, Serbian and Portuguese Forces when travelling on duty ; to Belgian sick and wounded going from hospital to a convalescent home ; to General Service Women of the Voluntary Aid Detachment, and to certain others.

The actual extent of the travel carried free on the railways under

the warrant system may be judged from the following figures for the year 1917 :—

Members of H.M. Forces travelling on warrants		28,520,677
Passengers carried on warrant on behalf of the undermentioned Departments :—		
Post Office	426,214	
Local Government Board (Belgian soldiers on leave and Belgian refugees)	257,057	
Ministry of Munitions	182,413	
,, ,, Labour	156,039	
,, ,, National Service	70,391	
Board of Agriculture (Food Production)	49,762	
Home Office (Prisons)	39,822	
Board of Trade (Merchant Seamen)	12,686	
Ordnance Survey	2,272	
		1,196,656
Total number carried on warrant		29,717,333

Free Food or Shilling Meals.

Certain classes of warrant holders were provided by the railway companies with free food—or, alternatively, with substantial shilling meals—in addition to free travel.

In pre-war days there was already in operation an arrangement under which the companies supplied naval ratings with a meal in the station refreshment rooms on the surrender of a voucher, or " meal order," the Admiralty reimbursing one shilling in respect to each meal so supplied. On the outbreak of the war, the companies continued this practice, but no longer asked for any refund from the Admiralty. Instead of doing so, they put the cost of the meals to working expenses, thus leaving that cost to be made good out of the guarantee. Early in September, 1914, the companies agreed to provide meals, under the same conditions, for soldiers in uniform, and they further undertook that, if a soldier in uniform was without a voucher, he should have the meal on payment of one shilling. The arrangement was mentioned in those supplementary clauses which in November, 1916, were added to the original agreement between the Government and the companies, co-ordinating the various services in regard to which direct payments to the latter were or were not to be made ; but, as will be seen by what is here stated, " free meals " were then already an established institution.

Various changes in the constitution of the meals thus provided were made from time to time, either on account of the increasing cost of food supplies or to conform with the rationing regulations. The former conditions led, in August, 1916, to different meals being served according to whether they were to be regarded as breakfast (5 a.m. to 11 a.m.), dinner (11 a.m. to 3 p.m.), tea (3 p.m. to 10 p.m.) or supper (10 p.m. to the hour of closing). From June 1st, 1917, this arrangement was discontinued in view of the still advancing prices and there was substituted a " standard

meal" which was to be supplied at any hour of the day to soldiers or sailors either on surrender of a voucher or on payment of one shilling. It was to allow of variations within a limited range. The viands included in the meal comprised :—

1 ham or beef sandwich (meat 2 oz.), *or* 1 meat pie (about 6 oz.).
1 large buttered roll, *or* 4 slices of bread and butter.
1 sausage, *or* 2 oz. of Cheddar cheese.
1 pint of tea or coffee, *or* (during legal hours) 1 pint of ale.

The privilege of obtaining this "standard meal" on payment of one shilling was, in August, 1917, extended to members of the Women's Army Auxiliary Corps, when in uniform.

Reduced Fare

Reduced-fare concessions, on the surrender of vouchers at the railway booking offices, had been in vogue for a long time prior to the outbreak of the war, the railway companies having then been at liberty to grant such reductions in fares, owing to special circumstances or to meet certain conditions, as they thought fit. Under State control they no longer had the same freedom since lower fares, no less than lower rates, might prejudice the traffic receipts to which, as we have seen, the Government were entitled in return for their guarantee. The only reductions in fares the Railway Executive Committee could authorise were those that the Treasury had either already agreed to or were likely to approve. Speaking generally, the principle adopted was that concessions in fares should be granted only to (1) members of H.M. Forces ; (2) organisations recognised by the naval or military authorities ; (3) societies directly concerned in the furthering of some national interest and (4) individuals the main part of whose livelihood depended on their travelling by rail.

Without the adoption of some such regulations as these, there would have come a time when, had the Railway Executive acceded to all the requests made to them, at least fifty per cent. of the civilian population of this country—apart altogether from members of the Forces—would, for some reason connected with the war or otherwise, have travelled regularly on the State-controlled railways either as non-payers or as half-payers. As it was, scores of requests from private organisations for special concessions were rejected by the Executive Committee, who, as railway managers, would have refused them in respect to their own lines and, in the circumstances, did not think it expedient that the Treasury should be placed at a disadvantage, the more so as the amount of free or reduced-fare travel on naval, military or departmental account was already assuming prodigious proportions.

Reduced-fare concessions obtained by means of vouchers subsequently to January 1st, 1917, were based either on the standard fare, i.e., without the 50 per cent. increase which came into effect on that date, or on the public fare, i.e., the standard fare *plus* the 50 per cent. increase. They were otherwise known as applying to the "1916 rate" and the "1917

rate" respectively. In the case of members of the Forces travelling on leave at their own expense, the 50 per cent. increase did not apply to their reduced-fare vouchers, but it did apply to those given to members of voluntary or other organisations not belonging to the Forces.

As an almost invariable rule, the concession was in respect to return tickets only, and in some instances a return ticket was granted in return for a single-journey fare on one or other of the bases mentioned. An exception was made in favour of officers, who, when travelling on leave, in uniform, and at their own expense, were able to obtain, whenever and as often as they pleased, a first-class ticket for a single journey at half the 1916 fare, as well as a return for the price of a single ticket. This was a privilege granted to them in recognition of what might otherwise be regarded as the hardship of the King's Regulations, which require that officers travelling by rail shall go first class. The hardship will certainly be less apparent when it is understood that an officer on leave, and paying his own fare, got practically a first-class at the price of a third-class ticket, and this, also, *minus* the 50 per cent. increase. Nurses attached to Military Forces, cadets training for positions as officers, and Gentlemen Cadets had the same privilege as officers when travelling, in uniform, at their own expense.

Down to August 1st, 1918, N.C.O.'s and men, in uniform, and when travelling on leave at their own expense, got third-class *return* tickets on paying the third-class single (1916) fare, but no concession was then made to them in regard to single tickets. From the date mentioned they were placed on the same footing as commissioned officers in being allowed to purchase single tickets at half fare, on the 1916 basis, as well as return tickets for a single fare, although in their case a limit was put on the number of vouchers to which each of them, in accordance with the Military Regulations, was entitled in the course of the year.

The foregoing concessions to the Military Forces on leave were equally shared by corresponding classes both in the Naval Forces and in the American, Belgian, French, Italian, Japanese, Rumanian, Serbian and Portuguese Forces when on leave and in uniform.

Officers, soldiers and seamen were, all alike, charged only one half the ordinary rate, with a minimum of one penny per package, for luggage left by them in railway station cloak rooms. Subsequently the reduced charge was also applied to rifles or equipment deposited in cloak rooms by members of the Volunteer Forces, when in uniform.

Concession of special travel facilities for members of Cadet Corps formed in connection with schools, colleges or otherwise was a well-established institution among railway companies prior to the war, and the companies had hoped to be able to continue it without interruption. But when, in 1916, it became a matter of urgency that all travel which could possibly be dispensed with should be abolished, the withdrawal of these particular concessions to Cadet Corps was, as at first arranged, to be included in the massacre of the innocents. Thereupon a plea in their favour was put forward by no less powerful a body than the War Office

itself. There were, it was pointed out, Cadet Corps in the country which the War Office recognised as training units both for the Regular Army and for the Territorials, and the Department suggested that the reduced-fare concessions—that is to say, return tickets for single fare at 1916 rates—should be continued to all those Cadet Corps, or Cadet Units, which were officially recognised by the War Office and constituted, by reason of this recognition, part of the Military Forces of the country. A fresh arrangement was accordingly made, on these lines, and, as showing the extent to which the Cadet movement had now spread, the fact may be mentioned that the list supplied by the War Office for the guidance of the railway officials comprised the names of over 400 separate and distinct units.

A pre-war concession on a like basis in favour of boys in Military Training Schools was continued for the same reasons. Members of Officers' Training Corps and Volunteers proceeding to drill travelled under similar conditions.

Until September, 1917, no special travel facilities were granted to nurses of the British Red Cross Society or the St. John Ambulance Association when travelling on leave. Nurses in military hospitals, staffed and supported out of military funds, were regarded as belonging to the Forces, and in their case they were, as we have seen, granted the same concessions as officers when travelling either on duty or on leave. The nurses in the two organisations mentioned got reduced rates when travelling on duty, but they paid full fares when travelling on leave. Another class of nurses, namely, those serving in ordinary general or other civil hospitals or infirmaries which, though not under military control, had undertaken the nursing of military cases, got no concessions at all, whether on duty or on leave.

The position was felt to be a hardship for women belonging to the two latter classes who, though engaged on work similar to that of nurses in military hospitals, were placed on a wholly different footing. The societies and associations took up the cause of their own nurses and the Railway Executive Committee championed the interests of the general-hospital and other nurses mentioned, who had no organisation of their own. Several attempts were made to induce the Government to extend the military-hospital concessions to the other hospitals and infirmaries concerned; but the War Office would not consent to this because of a fear that, if such course were adopted, it might lead to their having to make similar concessions to certain grades of their own staffs not then in the enjoyment of them.

Finally, in September, 1917, the War Office and the Treasury agreed that one voucher every six months, entitling the holder, when on leave and in uniform, to obtain a third-class return ticket for a single third-class fare, on the 1917 basis (i.e., *plus* the 50 per cent.), should be granted to fully-qualified women nurses, probationers and masseuses employed their whole time in Red Cross hospitals or in civil hospitals, infirmaries and convalescent homes officially recognised as engaged on nursing work

for the War Office or the Admiralty though not under military control.

The necessary vouchers (which, before presentation at the booking offices, were to be filled in and signed by the medical officer or the matron in charge of the hospital or other institution) were printed by the Railway Executive Committee, who charged bare cost for those supplied to the Red Cross Society. As regards those for the nurses in the other hospitals, etc., the Executive Committee not only provided the vouchers free, but undertook, without charge, the distribution of them, in books of twenty-five each, among no fewer than 1,200 civil institutions specified on a War Office list, while the staff of the Executive Committee afterwards checked every voucher surrendered at the booking offices, in order to ensure that no individual nurse had exceeded the stipulated allowance of one in six months. The number of vouchers so distributed by the committee between September, 1917, and December, 1918, among a specially deserving class of war-workers, and apart from those dealt with by the Red Cross Society, was 41,000.

In addition to the free tickets they got when travelling on duty, women of the Mobile Section of Queen Mary's Army Auxiliary Corps (formerly known as the " W.A.A.C.'s "), of the Mobile Branch, General Service Section, V.A.D., and of the Women's Legion (lady drivers of ambulance motor cars, and others, who eventually became part of the Royal Army Service Corps), were allowed to have, once every six months, when on leave and travelling in uniform, third-class return tickets for a single (1917) fare.

The fact may be remembered that in 1917 the whole of the hay crop of the country was commandeered for Army purposes, and that no farmer was allowed to sell hay to any private individual without a license. Railway companies, also, were asked not to accept hay for transit to private individuals unless the sender produced a permit. It further became necessary that some one should be on duty at each of the forwarding stations in the country districts in order to check the weights of the hay as delivered there by the farmers for dispatch either to the ports, for consignment overseas, or to military depôts at home.

This was thought to be work that might well be undertaken by women, and a Women's Forage Department of the Army Service Corps was formed for the purpose. Those who joined had often to take up their duties at places distant from their homes, and, in addition to being supplied with warrants which allowed them, as members of the Forces, to travel free to their destination, they were given vouchers twice a year in order that they could, when on leave, obtain a third-class return ticket on payment of a third-class single (1917) fare.

In the arrangements applying to merchant seamen, which were already in operation prior to the war, there were various expansions as the result of war-time developments.

Under the " transmission of wages " scheme, designed to protect seamen from being plundered by thieves or harpies as soon as they came

ashore and were paid off, the men were already receiving from the Board of Trade official at their port of arrival a voucher which enabled them to obtain a railway ticket to their homes without the direct payment of any money, the Board of Trade debiting the full fare to the shipowner, who, in turn, deducted the amount from the man's wages.

As the Germans got more and more active with their U-boat campaign and the Admiralty started their convoy system, many merchant vessels were diverted from their home ports to others, so that a seaman who had expected to land at, for example, Liverpool, where, perhaps, he lived, might find himself at Bristol, instead. The Board of Trade met such cases as this by giving the men vouchers which enabled them to get a free railway ticket to their proper port, no payment being asked for from them since the change of port had been due either to considerations of State policy or to circumstances for which, of course, the seaman was in no way responsible.

When, again, the 50 per cent. increase on fares was introduced, officers and men of the mercantile marine considered they had a grievance in being required to pay an enhanced fare when returning to their homes from the port at which they had landed on the termination of their voyage. They admitted the reasonableness of trying to discourage people from unnecessary travel, but they pleaded that their own journeys by train were compulsory, as an adjunct to their occupation, which was in itself a work of national importance. It was the means, they said, by which the nation's food supply was being maintained, while it was, also, carried on by them at serious risk to their lives. Their pleas were accepted, and a voucher was introduced enabling them to get third-class tickets *minus* the 50 per cent. increase at any one of a series of ports in the United Kingdom scheduled for the purpose by the Board of Trade.

Then there was the hard case of the shipwrecked mariner. His interests prior to the war were looked after by the Shipwrecked Mariners' Society. That excellent organisation received him when he was brought ashore, clothed and fed him, and gave him a voucher which enabled him to get a railway ticket to his home free of cost to himself, the society afterwards paying to the railway company a reduced fare on the basis of half a single (1917) fare and one-eighth, or the equivalent of nine-sixteenths of an ordinary single fare for a single journey. This pre-war arrangement was continued during the war, but when the U-boats took to sinking all vessels on sight—as far as they could—and the number of shipwrecked mariners greatly increased, the British and Foreign Sailors' Society also took up the philanthropic work of looking after them and applied to the Railway Executive Committee that they should be given the same facilities as the other society. The request was acceded to, both getting vouchers which allowed of the purchase of tickets on the basis stated above.

Members of the Empire Parliamentary Association—otherwise members of the Dominion Parliaments of Australia, Canada, Newfoundland, New Zealand and South Africa—visiting this country in the further-

ance of our propagandist efforts, were allowed single tickets on payment of half the single fare, and return tickets for single fare, at the 1917 rate.

In the pre-war days, certain religious organisations were able to get special travel facilities, on the basis of a single fare and a third for a return ticket, for those of their representatives who took up work in territorial camps. The tickets thus issued were available for a return journey within twenty-one days, the camps being then in existence for only a limited period. Under war-time conditions the camps became permanent ones—or permanent for the duration of the war, at least ; they increased largely in number ; more " Institutes," " Homes " and " Canteens " for soldiers and sailors were opened, and more religious organisations took up the work and asked, in turn, for travel concessions. These were eventually granted so as to include the following : Church Army, Salvation Army, Church of Scotland, United Free Church of Scotland, Young Men's Christian Association, United Navy and Army Board (Baptist, Congregational, Primitive Methodist, and United Methodist Churches), and Wesleyan Army and Navy Board. The durability of the return tickets was, also, extended to three months. Even this arrangement failed to suit camp workers overseas, who got away on leave only once every six months, and the availability of the tickets was, accordingly, further extended to that period.

One set of reduced-fare concessions there was which served to show that, while the Railway Executive Committee were forced both to refuse many of the requests made to them and, under direction, or with the assent, of the Government, impose from time to time more or less serious restrictions on the travel facilities of the general public, they extended sympathy in directions where there was a real call for it, and were ever ready, even amid a multiplicity of grave and responsible duties, to adapt the traffic arrangements, so far as could be done, to fresh wants or new conditions as they arose.

Early in the war it was agreed that, in the event of officers, men or nurses lying ill in hospital in this country, the medical officer at such hospital should forward to their relatives a voucher which, on presentation at the booking office of a railway station, would authorise the issue of (not more than) two return tickets, enabling them to travel at single fare for the return journey, on the 1916 rate, to the town in or near to which the hospital was situated, in order that they could visit the sufferer. This arrangement was found to be unsatisfactory in serious cases since it meant that if the relatives got information by telegraph that the patient was in a critical condition, they had to await the arrival of the voucher by post before they could start on a journey which might, by that time, be—too late !

On this position being realised, it was arranged that, if the medical officer sent telegraphed permission to any relatives to visit the hospital under the conditions stated, those relatives, in the event of their being either in necessitous circumstances or reluctant to pay the full fare for what might be a long journey, should be empowered to go to the nearest

police station and, on production of the telegram, there obtain a police warrant which, overstamped " On War Office Service " or " On Admiralty Service," as the case might be (in order to show that the warrant had not actually been issued on police account), would enable them to obtain free tickets at the railway booking office and start on the journey by the next available train. This new and improved method of procedure gave great satisfaction in many a distressed household.

A like arrangement applied in regard to soldiers lying seriously ill in hospital in France ; though in these instances the relatives travelled first to London, whence their further journey to France was arranged by the War Office. Later on, when the activity of the U-boats increased, the same privilege was—so far as this country was concerned—conceded to the relatives of officers and men of the mercantile marine lying dangerously ill in hospital at some port where, it might be, they had been landed after having been torpedoed.

Munition Workers' Privileges.

Tickets at workmen's fares were issued to munition workers to meet the varying shifts of duty instead of between certain hours only. This was, of course, merely an arrangement designed to suit the labour conditions of their employment. It was in regard to week-end leave and holidays in general that munition workers became, for a time, the most highly favoured among the industrial workers of the country under war-time conditions.

When, in the early part of 1917, there was a general withdrawal of cheap week-end tickets, in order that the amount of railway travel should be still further reduced, representations were made that a large number of married men—amounting in the aggregate, it was said, to 80,000—had been induced to become munition workers and go to factories in different parts of the country by reason of an assurance given by the Ministry of Munitions that they would be able to get cheap week-end tickets to their homes, on the basis of single fare for a return ticket ; and it was suggested that the withdrawal of this facility would be regarded by the workers as a breach of faith on the part of the Ministry. By way of compromise, it was arranged that 20,000 cheap-fare vouchers should be placed at the disposal of the Ministry of Munitions every week, so that each of the said 80,000 married men—for whom alone they were intended—would be able to visit his home once a month. Down to about June, 1917, the number of these vouchers actually used week by week did not exceed 5,000 or 6,000. Then the War Office and the Admiralty asked that week-end cheap-fare vouchers should be issued for the workpeople in their depôts. This was agreed to by the Treasury, and, inasmuch as the Ministry of Munitions were not using more than a small proportion of their own supply of 20,000, it was arranged that 1,000 of these should be placed, week by week, at the disposal of the Admiralty, and 500 at that of the War Office. In order, apparently, to get rid of

the balance that still remained on their hands after the wants of married men visiting their homes had been fully met, and rather than confess that more vouchers had been applied for in the first instance than were really wanted, the Ministry of Munitions next proceeded to distribute the balance with a generous hand among unmarried as well as married munition workers, and no longer restricted their use to the "home" stations of those to whom they were given. In this way practically the entire weekly supply of 20,000 was disposed of by the three departments, and week-end travel on the railways was kept up proportionately.

This, however, was not all. For the August Bank Holiday of 1917 the Ministry of Munitions asked for an additional 40,000 vouchers—and got them. For the Christmas holidays in the same year they asked for an additional 60,000, and once more got them. The total number of munition workers travelling on return tickets at single (1917) fare in the month of December, 1917—when the British public were being implored to show their patriotism by not travelling at all—was over 138,000. In this same month there were also presented at railway booking offices more than 40,000 Ministry of Munitions warrants entitling the holders to free tickets on the assumption that they were travelling on the business of that Department.

For the Easter holidays in 1918 there were issued to the Ministry of Munitions 80,000 extra vouchers, and, altogether, the number of munition workers who travelled at cheap-fare rates during the five weeks in March was just on 102,000, notwithstanding the appeals made to the workers, in view of the situation on the Western Front at that time, to postpone their holidays and continue at work throughout Easter in order not to interfere with the output of munitions. Another 80,000 extra vouchers were issued at the Whitsuntide holidays; but meanwhile these substantial increases had brought matters to a crisis. The original idea of allowing married men among the munition workers to journey to their homes once a month at cheap fares had expanded into what was practically a wholesale distribution of vouchers alike to munition workers, Admiralty workers and War Department workers, and such vouchers were obviously being used, not alone for their original purpose, but for pleasure trips and "joy rides" in general at holiday times. There was really no legitimate reason why munition workers, then reputed to be among the best paid of the industrial classes, should be thus specially favoured as against other war workers receiving lower wages and, also, voluntary war workers, getting no remuneration whatever, who had to pay the full fare plus the 50 per cent., and even then were looked upon as unpatriotic for wanting to travel at all unless they had the best of reasons for so doing.

Incidentally, also, this matter of the munition workers' week-end and holiday tickets was but another example, not only of the abuses to which such concessions were found to have become liable, but of the way in which, when one department of the State got a particular privilege in regard to railway facilities, other departments assumed that they,

or the special interests which they represented, should have the same favour conferred on them. Alternatively, they might deem it expedient to yield to the demands made by their own workers for the concession of privileges similar to those that others were getting.

The whole business went forward on the snowball principle. Not only were warrants and vouchers used in excessive quantities, and for purposes for which they had never been intended, but requests for fresh concessions were constantly being made. Certain of the State departments—and especially newly-formed ones—even thought themselves at liberty to offer free or reduced-fare travel facilities to particular classes of workers without troubling to consult the Railway Executive Committee at all. An example in this direction is afforded by the following announcement made in a pamphlet issued in March, 1918, by the Ministry of National Service :—

> Provided there is no unforeseen change, for military reasons or otherwise, in the existing railway arrangements, you will get a free railway warrant to go to your home at any general holiday, or other generally-observed trade holiday, and also a free holiday warrant to go back to your work after the holiday.

The whole position was one that clearly called for reconsideration. The Railway Executive Committee made a very strong protest to the President of the Board of Trade at the Easter holidays of 1918, when the demand for extra vouchers for munition workers first attained the proportions of 80,000. The President of the Board of Trade thereupon took the matter up with the Ministry of Munitions and the Treasury, while some strong comments on the whole position in regard to railway travel on Government account appeared in the Press, *The Times*, for instance, saying thereon :—

> We trust that Parliament will pay some attention to the growing and widespread abuse of railway passenger traffic on "warrants." One of the results of the State control of the railways is that vast numbers of people are constantly travelling on "warrants" which would not bear close investigation. This is not solely a question of military "warrants," though the Army is responsible for a reprehensible amount of unnecessary passenger traffic. We believe, for example, that the Ministry of Munitions is most careless in the use of the railways, and the way its staff exercise their privileges with regard to passenger travel ought to be carefully examined. The Government have every right to impose further restrictions on the public, but they have no right to countenance excessive and wasteful use of travel facilities either by the Army or by any of the other State departments.

Finally, the Ministry of Munitions itself offered to surrender the whole scheme of 20,000 weekly vouchers provided the Admiralty and the War Office would forego the proportion thereof allocated to them, and it offered, also, that the extra 80,000 for the following Whitsuntide should be the last of the special allowances for holidays. This offer still left to the War Munition Volunteers and the Army Reserve Munition Workers the warrants which formed part of the contract made with them, and the Ministry of Munitions now put in a plea that soldiers released from the Colours to take up munition work should be placed on the same footing.

A settlement was arrived at on this basis, and an announcement to the following effect was made in the Press on May 30th, 1918 :—

> The President of the Board of Trade states that he has been in communication with the Minister of Munitions on the subject of special cheap travelling facilities and regrets that it is necessary, owing to the pressure on the railways, that the limited number of cheap week-end tickets which have been issued to employees of controlled establishments must be withdrawn.

Directions were, it was understood, also given that warrants and vouchers issued to Government departments for certain distinct purposes were to be used for those purposes only, and that no new ones were to be adopted, or any departmental promise of free travelling or cheap tickets made, without the knowledge and approval of the Railway Executive Committee, and, also, without prior reference to, and sanction by, the Treasury.

Aims at Economy.

The issue of so great a multiplicity of warrants, vouchers and forms in respect to railway travel became, in course of time, a very complicated business, and, with a view to avoiding, whenever possible, an increase in the number, the Railway Executive Committee adopted the expedient, when a concession was made to any further department or organisation, of allotting to them warrants and vouchers already in use, overprinting or rubber-stamping them with the name or the initials of the particular body or group of persons to which the actual users belonged. When, for example, the Women's Army Auxiliary Corps was being recruited, those who wished to join had to apply at the Employment Exchanges, whence they were sent on to the nearest Selection Board. This might, and generally did, mean a rail journey to the particular centre where the Board was sitting, and the applicant was naturally not expected to pay her own fare. As it happened, the Employment Exchanges already had a pre-war warrant designed to enable them to provide applicants for work with tickets for the rail journey to the place where they would find it; and the plan was now adopted of utilising this same warrant for the "W.A.A.C." candidates, a slip instructing the booking clerk to issue a return instead of a single ticket being attached to the warrant when a return was desired or might be thought necessary.

Warrants as Tickets.

Another and still greater advantage which, from the early days of the war, the Railway Executive Committee had desired to secure was the recognition of warrants as equivalent in themselves to railway tickets.

The practice followed in the first instance was that all warrants, vouchers or forms applying to free or reduced-fare travel were to be presented by the holder at the booking-office of the railway station from which the journey was to be made, and there exchanged for a railway

ticket. This procedure led to greater pressure, longer queues and much more work at the booking offices, to the delay of trains, and to the handling of the passenger traffic being rendered more difficult. Increased strain, also, was imposed on the women and youths substituted for the male booking clerks who had joined the Forces. The strain was felt, not alone in the issue of the tickets, but in the clerical or accounting work that had to be done in respect to them at the close of the day. Then, at a time when the most efficient use of Man-Power had become a matter of national importance, a small army of printers must have been employed in producing, by the million, two sets of railway tickets, or their equivalents, when one set should have sufficed. Finally there was the question of economy in the use of paper and pasteboard on account of the serious shortage which steadily developed in the supplies of those materials.

In the opinion, however, of the War Office authorities, any direct and general user of warrants as tickets, without the check upon them involved by exchange at the booking offices for railway tickets proper, would be likely to lead to abuses; and certain it was that such abuses had already occurred, as, for instance, in the case of a man who had a warrant for a journey from London to Bristol made out "viâ Edinburgh and Glasgow"—so that he could visit Scotland *en route*. To this the railway people replied that ticket inspectors and collectors would be quite as ready to detect such abuses as the booking-clerk substitutes and that, admitting the possible occurrence of a certain number of abuses, the benefits to be gained from issuing the equivalent of one ticket in place of two would fully compensate for the risks that might be run.

At last the War Office agreed that, as from May 1st, 1917, officers and men of his Majesty's Forces (including Colonial Contingents) and of the Allied Forces to whom certain specified warrants were issued should, when travelling in uniform, during the period of Government control of the railways, be allowed to use their warrants as tickets without exchanging them for railway tickets at the booking office; but the War Office was not willing that the same concession should be made in the case of nurses and other women holding similar warrants, so that, in their case, they still had to exchange the warrants at the booking offices.

A Government Department Ticket.

The ideal of the Railway Executive Committee went still further than the avoidance of the exchange here in question. Their great aspiration was to do away altogether with the large and complicated assortment of warrants for free travel by having a "Government Ticket" for all departments alike, to take the place of warrants and be itself used as a ticket. There were many benefits that would result from this further development of the standardisation principle; but it was not until March 1st, 1918, that the Government Department Railway Ticket, as it was called, could be brought into operation. Known as "A/CS.

Gen. 17," the ticket—a strip of paper $4\frac{1}{2}$ inches by $3\frac{3}{4}$ inches—was as follows :—

[Front of Form.]

Available First Class. Initials of Issuing Officer .....

If the words printed above are cut off, this Ticket is available for Third Class *only.*

Government Department .....

RAILWAY TICKET. Available until .....191.....

From ..... *Station.*

To ..... *Station.*

Name of Passenger .....

Service or Authority for journey .....

Signature and rank of issuing Officer .....

This ticket is not transferable.

No.....

Write in ink in Block Capitals. Any alteration will make this Ticket useless. Not available for a journey on London Electric Tube Railways, or for Irish Cross-Channel Traffic. This ticket must be given up to the Railway on the day on which it is used (see Note (2) overleaf).

Official Stamp and Date of Issue.

A/CS. Gen. 17.

[Back of Form.]

1. As the cost of all services rendered under the authority of this ticket falls upon the Exchequer, it is only to be used for journeys directly authorised by, and chargeable in the first instance to, a Government Department.

2. The person to whom this ticket is entrusted will be held liable for it until it has been examined and allowed by the issuing department to which it will be returned by the Railway Company concerned.

3. The signature of Issuing Officer overleaf must not be that of the Passenger.

The new ticket was issued to departments or to individuals as follows:—

Agriculture and Fisheries, Board of (Food Production).
Air Ministry, including Royal Air Force.
Americans in United Kingdom travelling to Winchester to enrol in the American Army. (*Tickets to be overstamped "U.S.A."*)
Food, Ministry of.
Information, Ministry of.
Mercantile Marine.
Munition Workers (Army Reserve).
Munition Workers (Volunteer).
National Health Insurance.
National Service, Ministry of.
National War Savings Committee.
Ordnance Survey.
Parliamentary War Savings Committee.
Pensions, Ministry of.
Post Office Engineering Departments.
Prisons—Escort and conveyance, travelling and removal expenses of Officers.
Refugees.
Road Board Employees.
Women's Army Auxiliary Corps—Applicants for the Corps travelling from their homes to central places of interview with the War Office Selection Board.
Workers on the Land.
Workpeople under Labour Exchanges Act.

The War Office and the Admiralty were still to use their own special forms.

Available for use by persons of either sex and whether in uniform or otherwise, the "paper ticket" was to be regarded as equivalent in every respect to a pasteboard ticket, there being no need to exchange it for the latter at the booking office. "A/CS. Gen. 17" was accepted on the steamboat passages to the Channel Islands and the Isle of Man. For Irish cross-Channel journeys "A/CS. Gen. 17" became "A/CS. Gen.

17a," being supplemented by a further detachable portion which was to be taken off on the steamboat in order that it could be forwarded to the Irish Railway Clearing House.

Separate tickets were issued for each individual and for each separate journey, although in the case of certain departments—the Ministry of National Service, for instance—a single ticket was so modified that it could be used for a number of persons travelling in one party.

Some time elapsed before the Government Department Ticket could be brought into general use, there being still on hand, in March, 1918, a large stock of warrants which, in the interests of economy, it was desirable should be exhausted before the substitute for them was adopted. Even, however, allowing for this fact, the total number of "paper" tickets issued to twelve departments during the six months ending November 30th, 1918, was no fewer than 1,409,206. This was in addition to 382,318 warrants for single tickets and 160,875 for return tickets. How these figures were distributed between the said departments is shown by the following table :—

Department.	Warrants for		Govt. Dept. Tickets.	Total.
	Single Tickets.	Return Tickets.		
Board of Agriculture	10,875	13,029	59,649	83,553
Board of Trade	12,984	3,739	—	16,723
Home Office (Prisons)	9,398	3,464	—	12,862
Local Government Board	5,478	40,630	3,048	49,156
Ministry of Information	—	—	3,509	3,509
Ministry of Labour	66,064	35,335	23,581	124,980
Ministry of Munitions	175,310	1,100	19,486	195,896
Ministry of National Service	38,109	732	1,215,974	1,254,815
Ministry of Pensions	480	199	21,416	22,095
National Health Insurance Committee	2	—	1,409	1,411
Ordnance Survey	478	684	—	1,162
Post Office	63,140	61,964	61,134	186,238
Totals	382,318	160,876	1,409,206	1,952,400

Multiplying by two the number of return tickets issued on warrants we get the equivalent of 321,752 journeys under this head, increasing the sum total of passengers on account of Government departments (exclusive of War Office and Admiralty) to 2,113,276. As will be seen on referring to the figures given on page 165, this 2,113,000 for the six months ending November 30, 1918, compares with 1,196,000 in respect to nine departments for the twelve months ending December 31st, 1917. The increase is especially marked in the case of the Ministry of National

Service, the total of that department being 70,000 for twelve months in 1917 and 1,255,000 for six months in 1918. In this last-mentioned instance, however, there was not necessarily any increase in the number of passengers actually carried. What happened was that, under the Military Service Acts, the recruiting work formerly done by the War Office was transferred to the Ministry of National Service, which thenceforward called up the men who were liable to serve and handed them over in bulk to the military authorities for enlistment. This meant that the men who had formerly travelled on War Office warrants which—as they were still in civilian dress—they had to exchange at the booking office for ordinary railway tickets, were now supplied with Government Department Tickets instead.

The redeeming feature in this particular story of the great expansion in departmental free travel lies in the fact that the use in the six months period of over 1,400,000 Government Department Tickets which did not require to be exchanged at the booking offices represented a great saving in labour, in time and in material. So manifest, indeed, were the advantages of the new system over the old one that the Railway Executive Committee were encouraged thereby to make a still further attempt to induce the War Office and the Admiralty to allow their own warrants to be used as tickets, not only by officers and men, but by nurses and all other persons, without distinction of sex or dress, to whom they were issued. After considerable negotiations, an arrangement to this effect was at last agreed to, and it came into effect on and from November 15th, 1918—that is to say, four days after the signing of the Armistice.

It has been shown that the benefits secured through the issue of the Government Department Ticket were in themselves substantial; but the really impressive figures are gained when one seeks to estimate the aggregate saving effected in the issue of pasteboard tickets at the booking offices as the combined result of the three stages in the concessions made, (1) the recognition as from May 1st, 1917, of warrants as tickets when so presented by officers and men on duty; (2) the introduction, on March 1st, 1918, of the standard Government Department Ticket, and (3) the extension, on November 15th, 1918, of the earlier arrangements to all holders of War Office and Admiralty warrants. Having regard, on the one hand, to the figures given on page 165, showing that the total number of persons travelling on warrant during the year 1917 was 29,717,000, and, on the other, to the fact that existing stocks of warrants and tickets were used up before the newer forms were adopted, and that the complete concession in regard to War Office and Admiralty warrants was not arranged until so late in the year 1918, it is estimated on what is regarded as a very conservative basis that the saving in the number of pasteboard tickets issued at the booking offices during the period from May 1st, 1917, to December 31st, 1918, was at least *thirty millions!*

Readers of an arithmetical turn of mind may be left to figure out for themselves what thirty million railway tickets would represent in actual weight of pasteboard; the number of hours it would take booking-office

clerks to give out thirty million tickets, in exchange for warrants, at a given number per minute ; the distance that thirty million tickets, placed end to end, would extend around the circumference of the earth, and other ingenious problems of that kind. Suffice it here to say that the arrangements made, while greatly facilitating the work of the railway companies, who had shown so much pertinacity in bringing them about, and while benefiting railway travellers in general by relieving proportionately the pressure at booking offices, were a material gain to the Government both in reducing the bulk of paper and pasteboard for which they would have to pay and in keeping down those working expenses of the railway to be made good by them under the State guarantee. The only cause for regret was that the improved system could not have been adopted to its full extent at a much earlier period of the war.

Reduced-fare vouchers still had to be presented at the booking offices by their holders in exchange for tickets since, in the case of these, there was an actual payment of money. Those so presented during 1917 by members of H.M. Naval and Military Forces travelling on leave at their own expense numbered 21,197,676. Adding to this figure the 29,717,333 persons who travelled free on naval, military or other Government warrants, we get for the one year a sum total of close on 51,000,000 no-fare or reduced-fare passengers carried on British railways during that period alone in connection with the war, though even this figure does not include reduced-fare vouchers conceded to members of organisations, etc., as distinct from the services and Government departments.

Figures for 1918 corresponding to those given for 1917 were not worked out on the same scale of completeness, but the number of all warrants or reduced-fare vouchers issued on behalf of Government departments of all types, and including the War Office and the Admiralty, has been definitely ascertained for the month of March, 1918. That number was 5,175,227. On the assumption that the other months in the same year would show approximately similar results, the sum total of Government passenger traffic on British railways during 1918 would have to be estimated at, in round figures, 62,000,000.

Reference has been made on p. 174 to the criticism aroused in the Press by the proportions assumed by railway travel on Government account. The same subject was dealt with in the " Third Report (of Session 1918) from the Select Committee on National Expenditure," wherein it was said :—

Since the companies are secured against loss, no matter what their expenditure may be, and since their management remains in the hands of their former officials, there is an obvious danger of relaxation of control and of a consequent increase of costs. Our Sub-Committee, which has been investigating this subject, has made careful inquiry into this aspect of the matter so far as relates to Great Britain. It has found no reason to conclude that such results have occurred. The causes which continue to make for economical management are, first, the desire of the Directors, the managers and their staffs, as good citizens, to protect the public interest by preventing extravagance from which the taxpayer would suffer ; and, secondly, the prospect that after the war the effects of any laxity of control would

continue. Whether the railways reverted to private management and the shareholders suffered the loss, or whether they remained in the hands of the State, the officials who had been to blame for waste would be held responsible and their future would be prejudiced.

There is a danger, however, from the opposite side. It is that Government departments, having the right of transit for men and goods without a separate charge in each case, may make excessive use of the railways, with the result that working costs would be unnecessarily increased, and the lump sum payable by the State swollen in proportion. There may be a tendency to forget that because the payment for the traffic is indirect and not direct, the cost of carrying it is none the less paid for. Whether these results have accrued or not is a matter on which it is difficult to obtain any trustworthy evidence.

There is reason to think, however, that the number of free warrants issued to officers and of journeys by officials of Government departments is excessive, and that greater efforts might be made to prevent unnecessary travelling on official business. The Treasury have endeavoured to stop abuses in this direction, and their action is being continued. It is difficult to defend also the concession by which any officer in uniform travelling, not on duty, but on his own private business or pleasure, is allowed to obtain a first-class ticket at one-half the ordinary rate prior to the increase of 50 per cent. in the fares. In other words, the officer not on duty travels at one-third the expense to which civilians are put, and the State loses revenue in proportion. As officers in uniform are not allowed to travel third class, it may be contended that they should be enabled to obtain first-class tickets at reduced rates, and the pre-war privilege of travelling at half the ordinary fares is not unreasonable. But as it has been found necessary to raise the general rate of fares, both first class and third class, 50 per cent., we think that this increase should apply universally. The rates of pay to junior officers having lately been considerably raised, this alteration could be effected without hardship. The officer would still be able to travel free when on duty, and at half the rates paid by other people when not on duty.

The recommendations made by the committee included the following :—

1. That instructions should be given to the Government departments to restrict travelling and traffic on their behalf as much as possible.

2. That the system under which free warrants are granted to officers travelling on duty should be reviewed.

3. That the privilege granted to officers to travel on their private business at one-third the fares usually payable should be reconsidered, and the pre-war practice of charging half-fares restored.

CHAPTER XVIII.

DEMOBILISATION.

JUST as the railway arrangements for the mobilisation of British troops, in case of need, had been made well in advance of that need arising, so was there a timely taking in hand of the complicated details which would attend the demobilisation of our Forces on the conclusion of a war that would, assuredly, end sooner or later, even although, at the moment, that end seemed to be still far off.

THE BRITISH ARMY.

Thus it was that in October, 1917, when the country as a whole was thinking of little more than the immediate outlook, the Railway Executive Committee were approached by the War Office concerning the eventual demobilisation of the British Army from the two-fold point of view of (1) the Forces overseas and (2) the Forces at home. Thus it was, also, that the Railway Executive Committee, in conjunction with representatives of the military authorities, devoted much attention to the task of evolving the best means by which, whenever the time should come, the said two-fold demobilisation could best be carried out.

In earlier wars the invariable practice had been to effect demobilisation of the troops from their regimental depôts ; but, having regard to the numbers of the men now concerned, the fact was realised that adherence to precedent would involve a vast amount of cross-travelling in the United Kingdom—a contingency which it was especially desirable to avoid owing, more especially, to the difficulties already experienced by the railways in providing for the transport requirements alike of the Government and of the civil population. Several alternative schemes were considered. The one eventually approved—so far as rail-transport questions were concerned—was based on the principle of demobilisation taking place, not from regimental depôts, but according to the location of the town or district in which each and every man concerned either lived or desired to take up his residence. It was foreseen that the adoption of this plan would involve a good deal of organisation ; but it meant the saving of a great amount of railway travel, and this consideration, in itself, was sufficient to commend the proposal to the favour of every one concerned.

For the purposes of the scheme, the United Kingdom was divided into twenty areas, namely, eighteen for Great Britain and two for Ireland. To each of them a dispersal camp or dispersal station was allotted, the

EMBARKATION.

OFF FOLKESTONE.

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RETURN AFTER VICTORY, AND THE SMILE
THAT TOLD THE STORY.

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idea being that every man resident, or wishing to settle, in any one of these areas should be sent for demobilisation to the dispersal camp therein, a considerable proportion of the railway travel that would otherwise be necessary thus being obviated.

Meanwhile the Railway Executive Committee had also been asked by the War Office in October, 1917, what was the maximum number of demobilised men the railways of Great Britain would be able to provide for at the end of the war ; and they replied that the companies would be able to deal with 40,000 per day, namely, 20,000 per day arriving here from theatres of war overseas, and 20,000 of the troops serving in the United Kingdom. This meant that the railways would be prepared to convey 40,000 a day to the dispersal stations. From these stations, however, the men would require to be taken on to their own homes, so that on and from the second day of demobilisation the railways would be carrying, not simply 40,000, but 80,000 a day under the demobilisation scheme alone, apart from all the other Government traffic on which they were engaged.

The figures suggested by the Railway Executive Committee were approved by the War Office, and from this time the arrangements for General Demobilisation were based on the assumption that men could be released from active service at the rate of 40,000 per day.

It next became necessary to decide on what principle the 40,000 per day should be distributed among the aforesaid twenty areas. The War Office authorities would want to know the system of allocation in order that the requisite provision could be made at the dispersal camps for such number of men as might be expected there, while the railway authorities would no less want to know for how many men they would require to provide transport to the camps concerned in the different movements so that they could prepare their plans accordingly.

The estimates desired were worked out on a percentage basis of the recruiting figures. In other words, the number of men recruited in each of the twenty areas was ascertained, and a calculation was then made as to what proportion this number bore to the total strength of the Army, the proportion arrived at being accepted as representing, approximately, the number that might fairly be allotted to the particular area concerned. Area No. 3, for instance, included Lancashire, Westmorland, Cumberland and the Isle of Man. The War Office already knew how many men had been recruited from the counties comprising each area, and the percentage which this number bore to the total strength of the British Army decided the rate at which men belonging to such area were to be demobilised. The results obtained may have been more or less hypothetical, but the plan resorted to was regarded as the simplest way of dealing with what might otherwise have been a very complicated question.

In its actual working, the scheme differed somewhat according to whether it applied to men from overseas or men demobilised at home.

Men from overseas arrived in this country principally at the ports

of Southampton, Folkestone, Tilbury and Immingham. Under the scheme as originally drawn up by the War Office and the Railway Executive Committee, particular dispersal stations were to be based on particular ports. Southampton, for example, was scheduled to receive all men destined for dispersal stations in areas which included counties as follows :—

Fovant (London and South Western Railway) : Channel Islands, Cornwall, Devonshire, Dorset, Hampshire (including the Isle of Wight), Somerset, Wiltshire.

Chisledon (Midland and South Western Junction) : Berkshire, Gloucester, Oxford, Warwick, Worcester.

Oswestry (Great Western and Cambrian) : Ireland.

Prees Heath (London and North Western) : Cumberland, Lancashire, Isle of Man, Westmorland.

Georgetown (Caledonian) : Argyll (including the Isle of Bute and the Isle of Arran), Clackmannan, Dumbarton, Perth, Renfrew, Stirling.

Kinross (North British) : Aberdeen, Banff, Caithness, Elgin, Fife, Forfar, Inverness (including Harris, N. and S. Uist, Barra, Isle of Skye), Kincardine, Kinross, Lewis, Nairn, Orkney and Shetland, Ross and Cromarty, Sutherland.

Duddingston (North British) : Berwick, Dumfries, Edinburgh, Haddington, Kirkcudbright, Linlithgow, Peebles, Roxburgh, Selkirk.

In order to facilitate the arrival at stated ports of men from overseas, it was planned that there should be set up behind the lines on the Western Front a series of " rest camps " to which men would be sent according to their Army Corps. In each of these rest camps there would, consequently, be found men who belonged, more or less, to every county in the United Kingdom ; and the idea was that all these men would be sorted out at the rest camps according to the areas constituting their ultimate destination, and then be sent on to the particular troop-railhead from which they would take train to the French port scheduled for the steamers that were to convey them to the port in this country to which their area and dispersal camp had been allotted. Put into railway language, the arrangement was that the rest camps were to constitute " sorting sidings " where the troops would be received " in the rough," be " marshalled " according to destination, and then sent on in " full train loads " (more or less) under such conditions as to make the least possible demand on the British railway services.

The scheme was admirably conceived and it promised to save much railway travel on this side. The Railway Executive Committee and the railway companies alike did their utmost to ensure its success, and elaborate arrangements, involving a great amount of time-table preparation, were made for the running of trains on the basis that had, it was thought, been definitely fixed.

Two distinct periods were covered by the arrangements—a preliminary period and the period of general demobilisation.

In the first period it was designed to deal with " demobilisers " (officers and other ranks who, immediately on the cessation of hostilities, would be required, whether in a military or a civil capacity, for demobilisation purposes), and " pivotal men " (officers and other ranks who, immediately

on the cessation of hostilities, would be required in their civil capacity for the purposes of national reconstruction). Of these two classes, including miners among the latter, between 5,000 and 6,000 per day were to be brought from overseas and landed at Folkestone or Southampton, in addition to the "leave" men travelling by the same routes, making a total of 20,000 per day from overseas. The railways would deal, simultaneously, with about 5,000 or 6,000 men to be demobilised daily from the Home Commands. For this initial stage, however, it was thought sufficient to have, approximately, only one dispersal camp per Command.

It was not until the second period was reached that the real trouble began. Then, at the last moment, when a start had already been made with the general demobilisation, the French authorities intimated that, owing to the congested condition of their own railways, they could not undertake the transport of the men from the rest camps to the different ports in France to which it was proposed to allocate them. All they could undertake was their conveyance in bulk, as it were, and without any attempt at discrimination, to such port as would suit the French railway arrangements, leaving the work of sorting out to be done on this side.

Following on this announcement, the elaborate arrangements made by the Railway Executive Committee and the railway companies had to be revised at very short notice, while, instead of men for particular destinations arriving here in large batches at one and the same port where special trains could be made up and sent away fully loaded, men for certain dispersal stations (using that word in its railway sense) were arriving alike at, for example, Southampton, Dover and Tilbury, rendering necessary the running, it might be, of three trains in place of one. The railway arrangements on this side were not only upset but rendered more complicated and less economical than would have been the case if the original arrangement could have been adhered to.

The programme for the demobilisation of men serving in the United Kingdom was somewhat different and much more complex. Each regiment or unit in the Home Commands was authorised to dispatch a certain number of men per day to the dispersal camp of the area in which they lived; and this meant that men in Norfolk, for instance, might all leave on the same day for London, Cornwall, Lancashire, Wales, Scotland, Ireland or elsewhere, without any regard for geographical uniformity. It meant, also, from a railway point of view, the transport of small parties to dispersal stations all over the country in place of the still fairly large parties of overseas men who were reaching the ports for certain destinations, notwithstanding the change in the original arrangements.

When the Home Commands men could start on their journey from an important centre whence a train was going direct to their appointed dispersal station, no difficulty was likely to arise; but provision had to be made for small parties of men travelling from outlying places to destinations which might be east, west, north or south. In order to meet this situation, the

Railway Executive Committee worked out a scheme providing that such parties should proceed first by ordinary train services to what were called "railway assembly points," the nearest junction on a main line being generally selected for the purpose and so designated. A number of special trains were next scheduled either to start from or to call at a series of assembly points, and, by means of these specials, which were timed to run to specified destinations on certain days of the week, it was possible, in combination with the local trains for the initial stage of the journey, to provide a service enabling men from any one regiment or unit to go with the least possible delay or inconvenience to any dispersal station in the United Kingdom.

The making of such complicated arrangements as these constituted in itself a great piece of work for the railways. It was accomplished only by bringing together representatives of all the companies concerned in the different moves, and, among other things, drawing up special time-tables which, as far as possible, would provide for every contingency.

The next item on the demobilisation programme, whether the men came from overseas or from the Home Commands, was the distribution from the dispersal camps.

After they had gone through the formalities required by military law and were free to go to their homes, the men were sorted into groups according to the railway station serving the place at which each one of them resided. This procedure was simplified by the fact that the whole of the stations in the area had previously been grouped according to the railway services which applied to them. Each group was numbered, and particulars as to the railway stations in it were supplied to the military authorities to enable them to post up notices in the camps for the information of those concerned.

Then the railway company responsible for the working of the railway station serving the dispersal camp arranged for one of its representatives to be on duty at that station for the purpose of co-operating with the military Railway Transport Officer also in attendance there in the regulation of the traffic and the provision of all necessary facilities. The Railway Transport Officer received advices from the military authorities at the camp as to the number of men who were ready to be dispatched to each group of stations, and he communicated these advices to the railway representative who, in turn, had to inform him as to the times at which the men should be sent down from the camp to the station for the particular trains by which they were to go. In some instances the men went in special trains to what were known as "distributing centres"—otherwise the railway stations of certain large towns—whence they continued the journey to their homes by ordinary train services.

Dominion and Colonial Contingents.

There was, naturally, a great desire on the part of our gallant brothers-in-arms from the Dominions and the Colonies to see something of the

Mother Country before their return home on the conclusion of the war, and in their case the general demobilisation was influenced by a willingness to respond, as far as possible, to this aspiration. Arrangements were accordingly made to bring a certain proportion of the Dominion and Colonial contingents to this country from the various theatres of war. The bulk of them were disembarked at ports on the South Coast whence they were sent to what were called " reception camps," or " embarkation pools," in different parts of the country. These camps—to which Dominion and Colonial troops already in the United Kingdom were also assigned—were set up within convenient reach of the ports from which the troops in question would eventually embark for their own country, and they were established mainly on account of the shipping situation, sailings being irregular owing to the shortage of tonnage. The ports in question were—Liverpool, Glasgow and Avonmouth for Canadians and Newfoundlanders, and Plymouth (or Devonport) and Southampton for Australians, New Zealanders and South Africans. The camp at Kinmel Park, for Canadians, was capable of accommodating 23,000 officers and men.

While nominally located in these reception camps, the troops were given leave of absence in order that they might gratify their wish to see as much as they could of England, Scotland, and, to a lesser though still appreciable extent, Ireland.

Their period of enforced leisure while they were waiting for the ships that were to take them home was, however, in no way devoted exclusively to sight-seeing. Arrangements were made by means of which members of the Dominion Forces—and especially those from Australia—could get an insight into technical, industrial, and commercial methods in England with a view both to their personal advancement on their return home and to the advantage of their own country. These aspirants for useful knowledge were accordingly found alike in public offices and commercial offices, in workshops and in warehouses of all kinds and descriptions. Some of them went to Covent Garden in order to study fruit-market conditions in this country, especially as concerned the requirements of English dealers in respect to grading and packing, and they learned so much as to the methods which should be followed that they predicted a far better future for Australian apples in competition here with American. The motor-car industry received special attention. Some Newfoundland fishermen went to fishing ports on the north-east coast to look into the working of the British fishing industry. More to the point, however, as regards the present work, was the fact that the railway companies gave these returning warriors—then in pursuit of the arts of peace—every facility to acquire a knowledge of British railway practice and performance, enabling them to learn what they could (in the time) of headquarters methods, accountancy, booking-office systems and clerical duties, together with the work of signal fitters, signal-interlocking men, electrical men and other grades.

Military Great-coats.

Subsidiary to the main questions concerned in the demobilisation of men belonging to the British Army, there was a minor one which, though comparatively small in itself, became one of the most unsatisfactory matters of any that the railway companies had to deal with.

The War Office instructions concerning demobilisation had laid down that uniform, boots and underclothing supplied by the Army authorities could be retained by the men, who were, however, within twenty-eight days of their demobilisation, to return their great-coats. For so doing each man was to receive a gratuity of £1. The Railway Executive Committee were asked if they could make arrangements whereby the great-coats could be handed in at any passenger railway station in Great Britain and the sum of £1 be paid to the soldier on presentation of a voucher, known as "A.F.Z. 50," bearing the stamp of the dispersal station through which he had passed and, also, his own signature. Such voucher would constitute the man's receipt for the money and would be passed on to the War Office for repayment of the money to the company concerned. Each coat was to be handed in as a parcel, tied up with string, without wrapping, and not labelled. The coats so received were to be forwarded to an Army Ordnance Depôt, preferably one in the county in which the coats had been collected.

Railway companies were, of course, obliged to accept for transport all such parcels as might be tendered to them; but their payment of the suggested £1 gratuity was another matter. The companies had, as we have seen, undertaken to provide travel facilities for 40,000 demobilised men per day for seven days a week. Assuming that the men handed in their great-coats at the railway stations in approximately the same proportion as they travelled, this would mean that the railway companies would not only have to receive and forward 280,000 great-coats per week, but would pay out, in the aggregate, £280,000 every week to the soldiers presenting them, waiting for the refund of this money by the War Office such time as might be required for the settlement of the accounts.

The Railway Executive Committee replied that, while there was no objection to the coats being received at the railway stations, difficulty in regard to the outpayments was anticipated since a large proportion of the stations were already having trouble in providing out of their station receipts the increased wages of their staffs, and they might not have enough cash available to pay for the great-coats, as well. The committee suggested that, inasmuch as various payments were already being made to the troops or to their dependants at post offices, the most practical course to adopt would be to add the great-coat gratuity to the existing list. The General Post Office authorities, however, were not willing to undertake this further work. Thereupon the Railway Executive Committee were further approached on the subject, this time with an intimation that the Treasury would be prepared to meet the financial difficulty by providing funds in advance. The railways were further appealed

to on the ground that, unless they undertook the proposed arrangement, it would be necessary for the military authorities to open offices all over the country for the reception of the coats—a procedure that would not only involve great expense but might then scarcely be practicable, having regard to the fact that demobilisation was already actively proceeding.

What the Treasury did, in effect, was to make a grant of £200,000 in advance, on account of the great-coats, and the Railway Executive Committee, in now waiving their previous objection, allotted this amount to the various companies in proportion to their net receipts of January, 1913, with provision for readjustment in case of need. So it was that before long the great-coats were being received at the railway stations in such numbers that not only were full wagon-loads of them made up, but the collection from various groups of stations required, in some cases, the running of special trains, consisting of sixteen or seventeen wagons, for the transport of the coats to the Ordnance Depôts to which they had been scheduled.

Later on, for what were regarded as good and sufficient reasons, the Railway Executive Committee were invited to arrange that the railway staffs should open the parcels handed to them and ascertain, not only that each really did contain a great-coat instead, possibly, of other khaki garments, but that the coat itself was not in a torn or ragged condition, instructions being given to them to refuse acceptance—and payment—if they were not satisfied on both of these points.

This meant, not only that a good deal of the time of the railway staffs might be taken up in opening and examining the contents of the parcels, and then tying them up again, but that they would have to run the risk of personal altercations with any strong and angry demobilised soldier to whom they refused the £1 he expected ; and this risk might, it was suggested, be especially serious at a small country station still being run mainly with the help of girls or women.

In the circumstances the Railway Executive Committee were unable to accede to the suggestion and the course of procedure was followed as before.

Demobilisation of Horses.

At the end of October, 1918, the Railway Executive Committee were informed by the War Office that it was intended to bring 125,000 Army horses from France for sale in this country, and they were asked to make the necessary arrangements for the conveyance of this number on the basis of 12,500 arriving each week for a period of ten weeks. The War Office scheme provided that the horses should be landed at definite ports, namely, Southampton, Tilbury, Surrey Commercial Dock, and Hull, and thence, in the first instance, be taken to certain quarantine stations where they would be kept for a period of two weeks. After this they would be sent to specified sale-yards within a radius of forty or fifty miles of those stations. It was, for example, proposed that 5,800 should be landed per week at Southampton, and that this number should be distributed

between four quarantine stations, namely, Swaythling, Romsey, Lathom Park, and Shirehampton, which, between them, would serve the western side of England as far north as Ormskirk; while from the quarantine station at (say) Lathom Park, horses would be sent on to sale-yards at Liverpool, Manchester, Warrington, Preston, Chester, Crewe, Lancaster, Penrith and Carlisle. The port of Hull was to serve fourteen quarantine stations—Edinburgh, Glasgow, Ayr, St. Boswells, Cupar, Newcastle, Croft Spa, Catterick, York, Ripon, Doncaster, Sheffield, Clipstone, and Grantham—each of which would, in turn, supply its own particular group of sale-yards. The Railway Executive Committee were given the complete list of ports, quarantine stations and sale-yards, together with the proposed figures applying in each instance, and the railway companies proceeded to draw up time-tables and make all other transport arrangements to cover the entire scheme.

The programme thus arranged provided for the running of special trains from the ports to the quarantine stations, and, as regarded transport from the quarantine stations to the sale-yards, special trains when the number of horses to be conveyed was large and ordinary trains when the number was small. The days of sale at the sale-yards had been fixed to suit the convenience of the auctioneers, and this fact made it necessary that the dates should all be scheduled and the train services worked out so that the horses would, in each instance, arrive at the sale-yard the day before the sale in order that they could be viewed by prospective purchasers. The drawing up of the programme was in itself a big undertaking—and one in which almost every railway company in Great Britain was concerned—although, in principle, it was in no way lacking in simplicity.

All these elaborate railway arrangements had, however, practically to be scrapped, at very short notice, owing to the inability of the Minister of Shipping to provide the tonnage necessary in order that the horses could be landed at stipulated ports, according to programme. Other plans had thus to be improvised at almost the last moment. There were, for instance, a number of horses in France which it was desired should be brought across as soon as possible, to relieve the position there; but no boats were available for the purpose. It was thereupon decided that the horses should be brought by the train ferry service from Calais to Richborough at the rate of 400 per day, and the Railway Executive Committee were given twenty-four hours in which to arrange for the sending of a train of empty cattle-trucks to Calais, so that the horses could be brought all the way by train. The wagons arrived at Calais at the appointed time. Subsequently horses reached this country at a variety of ports other than those originally planned, and fresh arrangements had to be made to meet each particular case. In the result, horses were sent to particular quarantine stations from several ports instead of from one—and the rail mileage was increased proportionately.

Then the original idea of distributing the horses among a large number of sale-yards throughout the country was also departed from to a considerable extent. Instead thereof, many more were sold at the quaran-

tine stations or at one and the same sale-yard, the military authorities finding that they could get higher prices in some parts of the country than in others. For the railway companies this change in plans involved, not alone a further departure from the scheduled arrangements, but much difficulty in providing private individuals with horse-boxes. In other words, if the original scheme had been adhered to, the companies would have had to do no more than supply cattle-trucks for the conveyance of horses in, possibly, train-load lots to sale-yards within a limited radius of each quarantine station. At these sale-yards many of the horses bought would have been within either walking or a short distance of their purchasers' stables ; whereas when these purchasers bought at a quarantine station, instead, the railway companies were called upon to provide, not cattle-trucks conveying a number of horses, but horse-boxes for single horses acquired by individuals resident, possibly, near to the outer edge of the aforesaid radius. Hence there was not only a greater amount of traffic but an abnormal demand for horse-boxes which, on some occasions, great difficulty was experienced in satisfying. To what extent the Government—or the auctioneers—gained financial advantage by the upsetting of the earlier arrangement is unknown ; but the effect on the railways was greatly to complicate the traffic situation at a time when serious difficulties in dealing with it were still being experienced.

Brigade Groups and Cadres.

Concurrently with all that required to be done in these various directions, as regarded demobilisation proper, there was another set of movements which, though not falling under the same definition, may be mentioned in connection with them.

These further movements related to the return of brigade groups and cadres to be brought here from the various theatres of war for the formation of the new post-war army. The groups and cadres arrived at Tilbury, Southampton and Dover from India, Mesopotamia, the Continent and other parts of the world ; but inasmuch as the War Office could not give information in advance as to number coming by each vessel, amount of equipment brought, and ultimate destination in this country, the railway companies could make no arrangements for dealing with the traffic until practically the very last moment in each particular instance. An already complex situation thus became still more complicated.

Public Opinion and "Speeding Up."

Meanwhile there were influences at work which had the effect of considerably disturbing the operation of the scheme elaborated and practically completed, prior to the signing of the Armistice, for the carrying out of general demobilisation.

Within a very short time of the conclusion of hostilities, the whole nation, more or less, seemed inclined to join in a demand for the early release of men from the Army, while in Parliament, in the Press and among the public in general there were vigorous denunciations of the Government on the ground that, as was alleged, no scheme for the demobilisation

of the Army had been thought out. The country, it was said, had once more been caught unprepared.

In order to conciliate this agitation, the Government gave instructions that all men on leave from overseas who could obtain from the person or company in whose service they were prior to August, 1914, a certificate stating that employment could be found for them, should be released from the Army—provided they could be spared. This concession, however, cut into the whole principle of the general-demobilisation scheme in so far as this was based on the release of men by industries. It also caused much dissatisfaction to such men on leave as were told that they must return to France because they could not be spared from the Army. Demonstrations by way of protest occurred at Folkestone, in Whitehall and elsewhere, and an order was thereupon given that, for the future, only those men who gave an undertaking that they would return to the Army overseas were to be allowed to come home on leave.

Further dissatisfaction arose among a number of men owing to the fact that, although they had obtained certificates from their former employer, they were not able to get them signed by the Regimental Records Office before their leave-time expired. In order to meet this further grievance, the Army authorities arranged that men returning to France should have their papers examined in London and, if necessary, be granted seven days' further leave in order that they could get their certificates completed. For the railways, however, the result of this further concession was that, after having brought a man from, for example, Scotland to London, *en route* for France, they might have to take him back to Scotland so that he could complete his papers and secure his discharge ; though if, on the other hand, after he had completed his papers, the Records Office should tell him that he could not be spared from the Army, the railways would then have to bring him to London again in order that he might, after all, proceed overseas. In this way they were carrying men three or four times over on, possibly, long journeys on main routes when single journeys should have sufficed.

On no occasion during the demobilisation period were the railway companies called upon to carry the actual number of men whom, under the scheme as laid down, they had agreed to carry from the ports or from the Home Commands to the dispersal camps, namely, 40,000 per day. Yet the effect of the aforesaid changes in plan was to cause far more trouble to the companies, and vastly more discomfort and confusion so far as ordinary railway travellers were concerned, than if the 40,000 had been carried, as originally proposed. From a railway point of view the changes in question meant that, instead of being able to make provision in advance for stated numbers of men who were to travel between certain definite points according to programme, the companies would find considerable batches of men coming to the stations, without the slightest previous notice, to travel by ordinary trains which, in the circumstances, might well afford inadequate accommodation for all who would then want to go by them.

The position will be better understood if the fact is borne in mind that when the earlier arrangements in regard to the obtaining of an employer's certificate were made, about 7,000 men were arriving in this country every day from France on a fourteen days' leave. The total number of such men in the country at any one time was, therefore, about 98,000, and it was conceivable that any proportion of this 98,000, short of the entire number, might obtain employers' certificates and suddenly turn up at the railway stations, without warning, in order to go by any ordinary train convenient to themselves that would take them to the particular part of the country where the dispersal camp to which they had been assigned happened to be situated.

These conditions, also, were experienced at a time when leave traffic and civilian traffic were both especially heavy. So far as the railways were concerned, demobilisation began on December 9, 1918. For a week or two the numbers dealt with were small; but they increased rapidly in proportion as the Christmas and New Year traffic began to develop, and they attained a maximum during the months of January and February, 1919. Business men who then found the trains exceptionally crowded and uncomfortable will understand from what has here been told the main reason for their experiences. By the middle of March, 1919, the work of demobilisation had made such progress that it was possible to close half the dispersal camps and carry on the remainder of the business in the other half, the strain upon the railways being relieved proportionately. By May 5th, 1919, there were only six of the camps, namely, Kinross, Prees Heath, Fovant, Ripon, Purfleet and the Crystal Palace, still open. By January 16th, 1920, all had been closed for dispersal purposes with the exception of the one at Purfleet, which was retained for dealing with men disembarking on the Thames. Those at Prees Heath and Fovant were converted into rest camps for men from overseas disembarking at Liverpool, Plymouth and Southampton and awaiting the completion of their papers.

As indicating the number of men dealt with at these dispersal camps, the fact may be added that at one of them alone, namely, the one at Prees Heath, near Shrewsbury, the sum total of those passing in and out, and arriving at or departing from either the Prees Heath or the Whitchurch railway stations, between January 3rd, 1919, and January 8th, 1920, was well over 1,000,000.

Demobilisation of Railwaymen.

When the demobilisation scheme was being revised in August, 1918, it was recognised that railwaymen would necessarily play an important part in the carrying of it into effect, both overseas and at home, owing to the greater amount of traffic which, for the time being, would be thrown upon the railways. For this reason, representatives of the Government departments concerned were prepared to include the railways among the "key" or "pivotal" industries to which priority was to be given in the

selection of men for demobilisation by trades in the interests of national reconstruction ; but the recognition of this principle was not sufficient, in its bearing on railwaymen as a class, to meet the special wants of the occasion. Companies in urgent need of drivers, firemen, signalmen, guards or shunters to meet the conditions due to the greater traffic would not have their requirements met if they got clerks and porters instead. It was thus thought desirable that railwaymen should be demobilised, not simply as members of the railway industry, but as members of particular grades therein, the companies being allowed to have a voice in the fixing of priority for those grades, according to the exigencies of the traffic situation. Of the 184,000 railwaymen who had joined the Forces there were 40,000 serving with the Railway Troops. Most of these 40,000 would be required to act as " mobilisers " overseas ; but the deduction of this figure from the total still left a large body of men, including a good proportion of members of the traffic staff, whose return at as early a date as possible would be of great value in enabling the companies to deal more efficiently with demobilisation traffic at home.

Part of the Government scheme was that every man serving in the Forces should fill up a form, known as the " Civil Employment Form," which, on completion, would be sent to the Employment Exchange in the district where he formerly worked, the name of such district being indicated. The Employment Exchange would send the form on to the man's employer, who would fill it in and certify as to whether or not he could provide work for the man on his discharge. Inasmuch, however, as railways occupied a position, in respect to their requirements, different from that of almost every other industry, the Ministry of Labour agreed to a special procedure for the demobilisation of railwaymen. In their case the Railway Executive Committee were to take the place of the Employment Exchanges, all civil employment forms filled in by British railwaymen being, in the first instance, passed on to the Executive Committee by the Ministry of Labour. The staff of the Railway Executive were to sort out the forms according to the companies for which the men referred to had worked, and the forms would then be forwarded to those companies with a request that they would indicate on them in what order of priority they wished that the men should be released. Such order was based on " classes," numbered from one to five, and the companies concerned were to stamp the forms accordingly, returning them to the Railway Executive Committee, by whom they would be sent back to the Minister of Labour, who, in turn, would forward them to the military authorities with instructions that the men were to be released in the order of priority stamped on the forms.

Under this arrangement each company had the option of selecting for early release the particular grade of men of which it was most in need at that particular moment, and, inasmuch as their requirements might vary considerably, according either to company or to changes in traffic conditions, the arrangement was one that could be readily adapted to the exigencies of each particular railway system.

CHAPTER XIX.

MILITARY AMBULANCE TRAINS.

Under the conditions of modern warfare, ambulance trains are no less essential to an army than troop trains and ammunition trains; and the intelligent foresight which plans in advance for the provision and working of the latter must equally include within the scope of its peace-time preparations the means by which to ensure an adequate supply of the former.

Dictates of common humanity would alone suffice to establish the principle that those who fight our battles for us should, in the event of their being wounded or falling sick, be removed as speedily as possible to hospitals where they will have the best chance of good treatment and an early recovery.

Humanitarian considerations are, however, not alone concerned. Looking at the matter from a military point of view, prompt removal of wounded from the Zone of the Armies may be no less vital to the Fighting Forces than to the men themselves. Napoleon is said to have declared that he preferred a dead soldier to a wounded one, and his preference was not surprising at a time when the conditions were such that the wounded were likely to become, not only an incubus to the unwounded, by hampering their movements, but a positive source of danger to them if they could be taken no farther than to some overcrowded, fever-stricken base hospital where they would help to spread still further the seeds of disease to which they themselves would run the greatest risk of falling victims. It is, in fact, one of the commonplaces in the history of warfare that, under the conditions of former times, and especially in the pre-railway days, far more soldiers died from disease than from wounds received on the battle-field. Early and efficient treatment, right away from sources of possible contagion, means, also, that the vast majority of slightly-wounded men, at least, speedily recover and are fit to return to the Fighting Lines after no more than a comparatively short absence. The possibility of thus helping to keep up the strength of an army must be of great advantage under any possible conditions of warfare, but especially so on occasions when every man who can be got is wanted.

The full story of "Railway Ambulance Transport," including the practical evolution in the American Civil War (1861–65) of ambulance cars and ambulance trains on the principle of those in use to-day—even though not of the same perfect type in matters of detail—has already

been told in the present writer's work on "The Rise of Rail-Power in War and Conquest." That story need not, therefore, now be repeated here. It might, however, be pointed out that this country was, on the outbreak of the Great War in 1914, not without a certain degree of experience in the construction and working of ambulance trains. This experience had been gained in the South African War of 1899–1902, when the "Princess Christian Hospital Train," specially built for the British Central Red Cross Committee by the Birmingham Railway Carriage and Wagon Company, Ltd., was sent out to South Africa, where it was used in addition to seven other such trains adapted from existing rolling stock in Cape Colony or Natal; while in England, on the occasion of the same war, the London and South Western Railway Company fitted up at their Eastleigh Carriage Works, at the request of the War Office, five coaches for the conveyance to hospitals in different parts of this country of sick and wounded soldiers arriving at Southampton from overseas. The same coaches were, in fact, regularly maintained on the London and South Western Railway from 1900 onward for transport to inland hospitals of sick troops from India or elsewhere. When used for this purpose, the cars were attached to ordinary passenger trains and so taken through to destination.

Ambulance Trains for Home Use.

Among the many other subjects dealt with by the War Railway Council, of whose activities between 1897 and 1910 an account has been given in Chapter III., was that of the equipment of ambulance trains for use on the British railways in the event of this country being involved in war. The plans of an ambulance train to be converted from existing rolling stock were prepared by the London and North Western, in consultation with the War Office medical authorities, and copies were sent by the Council to certain other companies with an inquiry as to whether or not they would be able to provide similar trains in case of an emergency arising at any time.

It was found that some modification in the plans would be necessary to permit of the proposed trains running over the lines of all the companies likely to be concerned, and conferences between representatives of these companies were held to consider the matter, with the result that towards the end of 1910 fresh plans, with modifications likely to meet all requirements, so far as could then be foreseen, were in course of preparation. So it was that when war broke out in August, 1914, complete drawings for the construction of ambulance trains for home use were in existence, and the War Office had no more to do than send word to the railway companies how many trains they wanted.

In the first instance the number asked for was twelve, and construction was undertaken by the following companies:—Great Central, two; Great Eastern, one; Great Western, two; Lancashire and Yorkshire, one; London and North Western, three; London and South Western,

one ; Midland, two. Each train consisted of nine vehicles adapted from ordinary corridor carriages, dining-cars, parcels vans or passenger brake vans. Bogie stock was mainly used. In the centre of the train was a pharmacy car which comprised a dispensary, a treatment room, an office and two linen stores. On one side of this pharmacy car there were two, and, on the other side, three ward cars. One of these had folding berths for four officers and sixteen men, while the others had similar berths for twenty men. The berths in the ward cars were in two tiers, and were so arranged that the lower could be used for sitting cases, the upper being let down so as to form a comfortable back for those seated below. Thirty sitting cases per car could thus be accommodated. Another car served the combined purposes of a kitchen, a pantry, a dining-room and a sleeping-compartment, the removal of the fold-up tables allowing of the lowering of frames on which beds could be made up for eight more men. Still another car afforded day and sleeping accommodation for two doctors, two nurses and two men of the R.A.M.C., while in the remaining car three third-class compartments each provided beds for two men ; one first-class compartment was converted into a store-room, and the other became a guard's van. The cars were all steam-heated, and they were equipped with Westinghouse as well as vacuum brakes. All the ambulance trains were numbered, in order that they could be identified and have their movements regulated. All, as soon as they were ready, were to be sent to Southampton.

The first convoy of war-invalids to reach this country from overseas arrived at Southampton Docks on August 24th, 1914, and the patients (111 sitting cases) were taken on to Netley Hospital by a special train made up of ambulance vehicles forming the War Department's pre-war stock thereof, supplemented by some London and South Western Railway Company's corridor coaches. No regular ambulance train was available at that moment, although the first of the twelve which the War Office had asked the railway companies to provide for use in this country—a train composed of Great Central stock—reached Southampton on the same day. On the evening of August 28th, it took to Netley Hospital sixty-two cot and 125 sitting cases landed at Southampton from the s.s. *St. Andrew*, one of three Great Western turbines which had been commandeered by the Admiralty immediately on the outbreak of war and converted into hospital ships.[1] The remainder of the twelve ambulance trains had arrived at Southampton by August 30th.

The first loaded trip to a destination off the London and South Western system was on August 29th, when the Lancashire and Yorkshire ambulance train, No. 6, conveyed sixty-five cot and 121 sitting cases to Well Hall, near Blackheath, on the South Eastern and Chatham Railway| From this time the arrivals at Southampton of vessels bringing wounded were steady and continuous. With the fall of Antwerp, they assumed what was then regarded as almost formidable proportions.

[1] The number of hospital ships eventually brought into use was about 100.

Boat succeeded boat in rapid succession throughout the month of October, 1914, bringing wounded Belgians in addition to an increasing number of British. Work at the port had to be carried on at high pressure day and night in order to deal promptly and efficiently with these masses of suffering humanity.

From the outbreak of the war Southampton had been regarded as the headquarters of an organisation which it would be necessary to set up for distribution, by means of ambulance trains, of sick and wounded troops coming to this country from overseas. Such organisation was then practically non-existent, or, at least, amounted to little more than the ordinary pre-war arrangements for dealing with sick troops arriving from India or elsewhere. On August 25th, 1914, Surgeon-General W. Donovan, C.B., A.M.S. (now Major-General Sir William Donovan, K.C.B., A.M.S.), was appointed Deputy-Director of Medical Services, Embarkation, and he at once assumed responsibility, at Southampton, for the disembarkation and distribution of the wounded landed either there or at other ports.

Four additional military ambulance trains were asked for from the railway companies in January, 1915, and the Great Central, the Great Western, the Lancashire and Yorkshire and the London and North Western Companies each undertook to supply one of the four. In order to meet still further the rush of wounded from overseas, it was arranged that each of the sixteen military ambulance trains should, in case of need, and by local arrangements, be supplemented by two corridor coaches for sitting cases, and that five emergency ambulance trains, consisting of ordinary corridor coaches for sitting cases, with a dining car attached, should also be provided for use, in the event of the accommodation afforded by the ambulance trains being inadequate. The location of the trains, when these additions to the total number had been made, was—twelve ambulance and two emergency trains at Southampton, and four ambulance and two emergency trains at Dover. This arrangement was, however, subject to later alterations.

In May, 1915, an intimation was given by the military authorities that more both of the ambulance and of the emergency trains were likely to be wanted. Thereupon the Railway Executive Committee appointed a sub-committee consisting of the Superintendents of the London and South Western (Mr. H. Holmes), the Great Western (Mr. C. Aldington now Gen.-Manager), the London and North Western (Mr. L. W. Horne), and the South Eastern and Chatham (Mr. E. C. Cox), to consider questions respecting the provision and running of ambulance trains for use in this country. Mr. F. G. Randall, who had then recently retired from the position of Superintendent of the Great Eastern Railway, was appointed secretary.

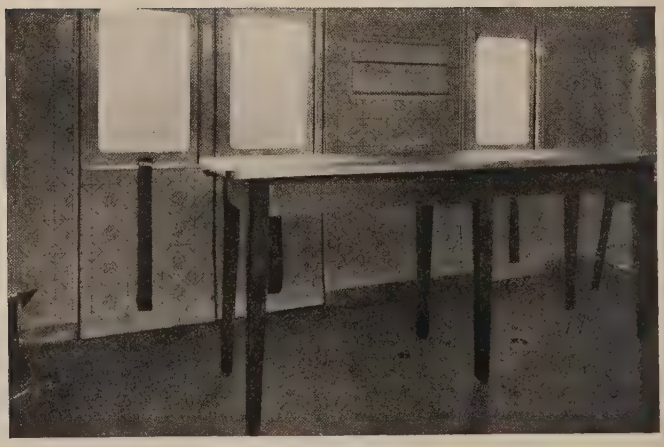
The members of the sub-committee, after a preliminary sitting in London, made personal inquiries at Southampton and Dover, and they gained the impression as the result of these inquiries and from a study of the traffic records that, inasmuch as many of the officers and men

Ward Car for Ambulance Train (Home Service).
Showing Cots arranged for Lying-down Cases (left) and Sitting-up Patients (right).

How the First Ambulance Cars were Shipped.
(Later on, Ambulance Trains for Overseas were run on to the Channel Ferry at Southampton for transport to France.)

[*To face p.* 198.

ENTRAINING THE WOUNDED.



OPERATION COMPARTMENT.

[*To face p.* 199.

conveyed by the ambulance trains generally sat on the lower cots, leaving the upper berths unoccupied, it might be arranged to provide an ordinary corridor coach for sitting cases of this type, one ward for lying-down cases being thus liberated from each ambulance train for the addition thereof to an emergency train. It was, however, pointed out by Surgeon-General Donovan, C.B., that many of the ambulance trains were making long journeys throughout the country and that, although the patients were not lying down when they started, there might well come a time during the journey when they would require to do so. The need of every one of them in this respect should thus be provided for, and he thought it inexpedient that there should be any reduction in the extent of the ward accommodation. With this view the members of the sub-committee, having regard to the situation as here stated, concurred, and the question which now mainly claimed attention was that of providing better accommodation on the trains for the staffs attached to them.

Standard Ambulance Trains.

At the outset of the war, when the enormous magnitude of our operations overseas was not foreseen, it was assumed that the ambulance trains at home would not require to make journeys much farther than to London, to the Home Counties, or to places on the East, South or West Coasts; but, in proportion as the number of wounded increased and the desirability of distributing them throughout the country became more apparent, the ambulance trains began to make journeys as far north as Scotland. This meant that the staff who travelled on them to and fro required adequate accommodation on their own account, apart from the provision made in the interests of the sick and wounded themselves. The staff thus attached to and living on each train generally comprised one medical officer, two nursing sisters, one non-commissioned officer, nine orderlies (R.A.M.C.) and two cooks, a total of fifteen persons.

In order to decide satisfactorily the various questions which thus arose, the Railway Executive Committee arranged for a meeting in London which, presided over by one of their members, Mr. (afterwards Sir) Francis H. Dent, General Manager of the South Eastern and Chatham Railway, was attended by the members of the sub-committee together with Surgeon-General Donovan, Surgeon-General Russell and Captain Redman, representing the War Office. It was then agreed that there should be drawn up a specification and plans which would standardise the arrangements and the details of fittings in regard to all further ambulance trains. Meanwhile four more emergency trains were to be provided at once, pending the provision of the same number of ambulance trains on the new basis.

The specification and plans thus prepared provided for Standard Ambulance Trains of ten eight-wheeled vehicles each, made up in the

following order :—One guard's, medical officers' and nurses' car ; one dining and sleeping car ; three ward-cars ; one pharmacy-car ; three ward-cars, and one guard's, orderlies' and stores car.

The first of these cars was to comprise a guard's compartment ; a bedroom, a sitting-room, a lavatory and a bathroom for the medical officer or officers ; a bedroom, a sitting-room and a lavatory for the nurses; a linen-cupboard, and a stove chamber. Each of the two sitting-rooms was to be provided with a leaf or fold-up table and four chairs, and each was to have, also, two racks and hat and coat hooks. In each bedroom there would be two beds, " of suitable design." In addition to the heating of the whole train by steam from the engine, the car was to be provided with a self-contained heating apparatus which could be used when the engine had been disconnected on the arrival of the train at its destination, or otherwise.

The dining and sleeping car was to be made up of a kitchen compartment, a dining and sleeping compartment, a lavatory compartment and a stove chamber. The kitchen compartment was to be fitted with a gas-cooking-stove and the necessary cupboards, sinks, etc., and the War Office was to specify what articles the railway companies were to provide in the way of cooking utensils, crockery, cutlery, and so on. The dining and sleeping room was to be fitted with ten cot-beds, of the same design as in the ward-cars, and two portable flap dining tables, capable of being firmly fitted to the floor. Each table was to provide accommodation for six men. This car was also to have its self-contained heating apparatus.

The general arrangements of the other cars, subject to improvements in certain matters of detail, were practically the same as before ; though here, also, as throughout the train generally, everything was now standardised. The trains were to be provided with telephones, one being in the medical officers' sitting-room, one in the office of the pharmacy-car and one in the corridor of the orderlies' and stores car. Each guard's compartment was to carry a set of emergency tools and fire extincteurs, and there was to be one extincteur, also, in the kitchen-car. Throughout the whole train there would be a still more abundant provision of contrivances and conveniences designed to contribute to the comfort of all concerned, as well as to ensure the most perfect cleanliness and sanitation. A Geneva Cross in 10-in. red and white squares was to be painted, not alone on each side of each car, but, also, on the top. The total length of a standard ambulance train was about 350 feet, and the average weight about 250 tons.

The London and North Western, the Great Western, the Great Eastern and the London and South Western Companies undertook to find stock for the four additional ambulance trains desired by the War Office, promising to have them ready in, approximately, six weeks from the date of the order. This made, altogether, twenty ambulance trains provided for the War Office by different railway companies, namely, Great Central, three ; Great Eastern, two ; Great Western, four ;

Lancashire and Yorkshire, two; London and North Western, five; London and South Western, two; and Midland, two.

In addition to these regular ambulance trains of a standardised type, various companies provided (1) permanent emergency ambulance trains, kept always in readiness for use as required; (2) other emergency ambulance trains made up whenever necessary; and (3) vans fitted up for cot cases, or corridor coaches for sitting cases, which could be attached to the regular ambulance trains to supplement the accommodation which these already afforded.

Ambulance Trains for Overseas.

On the sending of the first British Expeditionary Force to France, it was arranged that the French railways should provide, not alone for their conveyance up to the Fighting Lines, but for the transport of the British wounded to a Channel port from whence they would be brought by English ships to an English port for distribution among the hospitals of this country. In these circumstances the sending of ambulance trains to France for the transport there of our own wounded was an idea that few persons, if any, can then have entertained.

Very speedily, however, the deficiencies of the course which had been adopted became apparent. The available supply of "sanitary trains" (as they are called in France) was wholly inadequate for the transport of British as well as of French wounded; and, having regard to the heavy casualties; to the serious losses in rolling stock which the French Railway Administrations had sustained at the hands of the invader; to the magnitude of the demands made upon the remainder of that stock for the transport of troops, supplies and material, and, also, to the heavy strain on French railwaymen remaining in the service, there was no prospect that the said Administrations would be able to find material and labour for the immediate provision of all the ambulance trains our own men were likely to want.

There was less reason for surprise at the position in which the French railways found themselves if we consider for one moment the condition to which Germany, who had prepared for this war of invasion for so many years, was herself speedily reduced.

According to an article published in the *Deutsche Medizinische Wochenschrift* in the early part of November, 1914, soldiers who had first lain for days in trenches half full of water, and been exposed, also, to night frosts, before they were seen by a doctor, were dispatched on long rail journeys in dirty trucks, "as many as thirty men, probably suffering from dysentery, lying in each truck on a little straw, packed as close as sardines, without attendance and without protection from the cold. . . . The cattle-trucks are, in the first place, needed to bring the forage, ammunition, horses and guns as near as possible to the battle-line, and it is only when these trucks are ready to go back that the

wounded are placed on them. Then, too, the train remains stationary for many a long hour in open country." [1]

Under the system depended on in the first instance in France, goods wagons of the same type as those taking supplies to the Front were fitted up with appliances on which stretchers or cots could be fixed, the wounded thus being brought back to the ports on the return journey. Writing in the middle of September, 1914, the Havre correspondent of the *Daily Mail* said :—

> A train arrived here last week in which the ordinary luggage-van type of trucks used in France for soldiers had been transformed into rough but very serviceable invalid-carriages. Each truck contains two stretchers slung one above the other on either side, two of them being slung on springs for ordinary cases and two fixed for cases of fractured limbs. There is a complete dispensary and a store-car attached, with, of course, a detachment of trained orderlies.

Extemporised emergency arrangements of this kind might be more or less excellent in their way ; but the fact had to be recognised that trains conveying wounded would be liable to inevitable delays, not only because of war-time traffic conditions but, also, because so many of the French lines consisted of single track on which even the wounded might have to be shunted into a siding and left there for hours at a time in order that reinforcements or munitions urgently wanted at the Front could pass. It was thus especially desirable that trains bringing wounded to the base should afford every comfort and convenience it was possible to secure.

So, at the end of September, 1914, a request was made to the Railway Executive Committee by the War Office that they would send on an ambulance train to France at once for the use of the British Army ; and the Executive Committee, in view of the urgency of the situation, thereupon suggested that there should be taken from the ambulance trains which, as we have seen, were then already available in this country, eleven ward-cars, a pharmacy-car and two brake-thirds (the last-mentioned to be used as stores and to be fitted with a stove for cooking purposes) for use overseas. It was thought expedient, however, that a member of the Executive Committee should first visit France to discuss technical details with the officers of the Chemin de Fer du Nord, and Mr. Francis H. Dent, who was accompanied by Mr. H. D. Earl, Carriage Superintendent of the London and North Western, and Mr. A. J. Hill, Chief Mechanical Engineer of the Great Eastern, undertook this mission. No difficulty, it was found, would arise in regard to either rail or loading gauge in the running of British-made vehicles on French railway lines, while the different types of couplings necessary could be readily provided. The work of fitting up or otherwise adapting this first ambulance train for overseas to the special conditions of running on the French railways was taken in hand by the London and North Western and the Great

[1] The Germans had a certain number of ambulance trains in use, but the supply, alike at first and throughout the war, fell far short of requirements.

Ward Car for Overseas Ambulance Train.

Ward Car arranged for Sitting-up Cases.

(Upper Berths Folded. Middle Berths Lowered to form Backs for Seats.)

[*To face p.* 202.

KITCHEN CAR, WITH RANGE AND "SOYER'S" STOVE.

PHARMACY CAR.

[*To face p.* 203.

Eastern Companies and the dispatch of the vehicles to France was begun within three weeks of the War Office request having been received.

What was thought of this train when it came into operation may be gathered from the following reference to it in a dispatch, dated "Northern France, November 10th," from the Medical Correspondent of *The Times*, published in the issue of that journal for November 14th, 1914 :—

> I suggested in a previous article that the accommodation in the north of France was inadequate to the number of wounded. That was some fourteen days ago. But the need for accommodation has been met instantly, and the staff has been increased in proportion. At this moment every wounded British soldier in Boulogne is receiving the best which skill and equipment can give him. Moreover, his journey from the firing-line has become in these latter days almost luxurious.
>
> I inspected yesterday, thanks to the kindness of Captain Dalrymple, who has charge of it, what is probably the most perfect hospital train in the world. This train has been built specially for the work of conveying wounded men, and the Great Eastern and the London and North Western Railway Companies have had a share in the building of it.
>
> It is composed of eleven coaches, each capable of accommodating twenty beds. The beds are placed against the sides of the carriage and can be lowered so as to allow free passage of stretchers up and down to the centrally-placed doors. Each bed has a wire-spring mattress, a thick hair mattress, and a covering of india-rubber sheeting. The carriages are steam-heated and connected by corridors. Each carriage, too, is a unit so far as supplies of hot and cold water are concerned. The train contains a complete electric-lighting installation which can be worked at half and full light pressure, and a large kitchen ; here meals for all the patients can be prepared and arrangements made for a constant supply of hot soup and beef-tea.
>
> There is, also, a well-arranged operating room, where urgent dressings may be performed, and a pharmacy with a complete set of drugs, dressings and other appliances.

By this time the need for more ambulance trains for the use of the British Forces in France was beginning to be keenly felt, and in December, 1914, the War Office asked the Railway Executive Committee to arrange for the supply of sets of specially-adapted vehicles which, converted from existing railway stock, and supplemented by ordinary corridor coaches for sitting-up cases, could form portions of two ambulance trains for use in that country. One of the sets was to consist of four ward-cars, two kitchen-cars and one pharmacy-car, and the other was to have five ward-cars, two kitchen-cars and one pharmacy-car. The cost of each set was defrayed by the flour millers of the United Kingdom, who had subscribed the necessary funds. Almost concurrently with this request came another, also from the War Office, for a third set of vehicles, namely, four ward-cars, two kitchen-cars, one pharmacy-car and one staff-car, the cost of which was met by Lord Michelham. The Great Western Railway Company undertook to provide one of the two trains to be paid for by the flour millers, and the Great Eastern became responsible for the other. The London, Brighton and South Coast Company supplied the third set of vehicles with the exception of the staff-car. This was sent from the carriage-works of the London and North Western.

With the prospect now opened up to them of further, if not continuous,

demands for ambulance trains for overseas, the Railway Executive Committee appointed the General Managers of the South Eastern and Chatham and the London, Brighton and South Coast Railway, with the Carriage Superintendents or other officers of the companies concerned, and, also, a secretary, as an Ambulance Trains for the Continent Sub-Committee to deal with the construction of ambulance trains for use overseas. This sub-committee was eventually constituted as follows :—Sir Francis Dent (Chairman) and Sir William Forbes, Railway Executive Committee ; Mr. F. W. Marillier, Great Western ; Mr. H. D. Earl and afterwards Mr. A. R. Trevithick, London and North Western ; Mr. A. J. Hill and Mr. H. Parker, Great Eastern ; Mr. A. H. Panter, London, Brighton and South Coast ; Mr. F. E. Gobey, Lancashire and Yorkshire ; Mr. W. Pickersgill, Caledonian ; Mr. R. W. Reid, Midland ; Mr. A. C. Stamer, North Eastern ; Mr. J. G. Robinson, Great Central ; Mr. S. Warner, London and South Western ; Mr. R. E. L. Maunsell, South Eastern and Chatham ; Mr. H. N. Gresley, Great Northern ; and Mr. H. J. Moore (L. & N.W. Rly.) Secretary.

One of the first questions the sub-committee had to consider was that of the charges to be made in respect to ambulance trains provided by the railway companies for use overseas, and it was agreed to recommend to the Railway Executive—who adopted the proposal—that the basis for such charges should be the cost of replacing existing vehicles, together with that of fitting and of transport to destination, though no payment was to be asked for in respect to rail conveyance.

These matters of detail settled, the sub-committee next turned their attention to the drawing up of designs for complete standard ambulance trains to be supplied from Great Britain to meet further requirements overseas, experience having shown that, owing to the shortage of their available rolling stock, the Railway Administrations in France would not be able to provide corridor coaches, for sitting patients, to be added (as originally designed) to sets of ward-cars, pharmacy-cars, etc., supplied from this side.

In order that the task of designing standard types could be better accomplished, there was formed in France in November or December, 1914, an Ambulance Train Committee which consisted of one representative of the British Railway Traffic Directorate, one British medical officer and one representative of the French Military Railway Authorities. Major A. F. Hosken, a technical railway officer, acted as secretary of the committee from the middle of 1915.

Complete co-ordination was thus secured between military and medical requirements in France and the technical possibilities of meeting them in England, the standard ambulance train evolved representing the combined wisdom and experience of those concerned alike in this country and overseas. It was composed of sixteen vehicles, namely, one combined brake-car for lying infectious cases ; one staff-car ; one kitchen and sitting sick-officers' car ; nine ordinary lying ward-cars, or, alternatively, eight of these and one infectious sitting car ; one

pharmacy-car ; one kitchen and mess-car ; one car for personnel, and one brake and stores-van. The accommodation provided was : lying-down cases, 320 ; sitting cases, 76 (at least) ; staff, 8, and personnel 39, a total of 443, apart from train crew, etc.

The ward-cars were regarded as the very best that could be arranged from the point of view both of simplicity and of efficiency. Each of the cars was fitted with thirty-six beds, in tiers of three.[1] These beds were specially designed by a member of the sub-committee, Mr. F. W. Marillier, Carriage Manager of the Great Western Railway. They could, if necessary, be used as stretchers, but their chief feature was that the cots were capable of being folded against the sides of the coach when the car required cleaning out, while, by lowering the centre cot flush with the side of the coach, the bed nearest the floor was converted into a comfortable seat or couch upon which the patients could sit at ease, the top cots still remaining available for lying-down cases.

As the result of this facility for converting the cots into seats, the less seriously wounded among the patients were enabled either to sit up or to lie down, as they felt disposed. In this way the sub-committee met still more efficiently, by securing a greater amount of accommodation per car, the point which had already been raised in connection with the ambulance trains for home service—that even "sitting-up" cases may not be able to sit up throughout the whole of a long journey. The cots thus made full provision for the comfort of both classes of patients. Where, again, this was possible, the cots were so spaced as to allow of the stretchers being placed direct upon them, the need for removing a dangerously-wounded man from the stretcher on which he had been brought into the car being thus avoided. Double doors were provided on each side of every ward-car, and as near the centre as possible, to permit of the stretchers being lifted in or taken out conveniently and in the least possible time.

The fact that each train was capable of accommodating approximately 500 persons, all requiring to be fed as well as housed, made it necessary that two kitchens should be provided. Each of these, in addition to its complete arrangements for the cooking of food, was capable of supplying fifty gallons of hot water at any time it might be wanted. Drinking water was available from a number of six-gallon tanks the taps and lids of which were padlocked. The total supply of water per train for all purposes was about 2,500 gallons.

The trains were lighted by electricity, and this they were capable of generating at whatever speed they might be travelling. Provision was also made for a plentiful supply of electric fans. As in the case of the home-service trains, the steam-heating applied throughout was supplemented by special arrangements—when the engine had been detached—for the self-heating of the coaches in which the staff and personnel lived.

The average length, over buffers, of a standard overseas train for

[1] It will have been seen that in the ambulance trains for home service each ward-car provided for twenty beds, in two tiers.

France was 920 feet without engine, and the average empty weight, exclusive of engine, was 440 tons.

Ambulance trains of the "improvised" type (adapted from French rolling stock and consisting of third-class coaches gutted and fitted with iron frame-work to carry stretchers in double tiers; restaurant-cars and sleeping-cars similarly treated; a goods van turned into a camp kitchen, and another third-class coach for the orderlies) were still being added to the available stock, and in his dispatch of February 2nd, 1915, Sir J. French spoke of twelve hospital trains as then running between the Front and the various bases. There was, however, need for more, and although some of the later "improvised" trains were, for their type, of an excellent kind (as was testified to at the end of January, 1915, by no less competent an authority than Sir Frederick Treves), there was a distinct preference for trains based on the "standard" designs drawn up by the English sub-committee and the Advisory Committee in France. It was mainly in accordance with these designs that the train presented by Lord Michelham and the two subscribed for by the United Kingdom flour millers were planned by the railway companies undertaking to provide them. These three trains were all ready to be sent out to France early in April, 1915, and so, also, was the "Princess Christian" ambulance train, constructed to the order of the British Red Cross Society by the Birmingham Railway Carriage and Wagon Company under the direction of the late Sir John Furley and Mr. W. J. Fieldhouse, who had both been closely associated with the construction of the ambulance train referred to on page 196 as having been sent out to South Africa at the time of the Boer War. Advice in regard to the work was also given by the Ambulance Trains Sub-Committee.

Towards the end of April, the Commander-in-Chief of the British Forces in France asked for eight more ambulance trains, and the Railway Executive Committee were requested by the War Office to provide them. The construction of these trains was undertaken by the London and North Western (two), the Great Western (two), the Great Eastern (one), the Lancashire and Yorkshire (one), the London, Brighton and South Coast (one) and the Caledonian (one).

Six additional trains were needed in October, 1915. On this occasion the London and North Western undertook to provide two of the six, though the company intimated that, in order to do so, it would have to build new stock for the ward-cars and probably, also, for the sitting-up cases. The Great Eastern was willing to provide one train, but would require to build new stock for it throughout. The Great Western could provide two trains, and the Lancashire and Yorkshire one, from existing stock. Arrangements were made for six trains on this basis.

Subsequent orders included one ambulance train for Salonika, four trains and some special vehicles for the Mediterranean Lines of Communication, and one train for Egypt.

In view of the difficulty that would arise in landing bogie coaches at Salonika, owing to the small capacity of the only crane available there

for lifting them off the vessel in which they would be sent out, the train designed for that destination was made up of four-wheeled North London Railway stock. When ready it was sent across to France for temporary use; but, in effect, it never got nearer to Salonika than Italy, and it counted as one supplied to the British Forces there.

The train for Egypt (taken from among those supplied for the Mediterranean Lines of Communication, another being sent out in its place) was required to supplement one that had been built in the workshops of the Egyptian State Railways for the Egyptian Red Crescent Society and presented by that society for the use of sick and wounded soldiers.

The number of ambulance trains for British troops overseas which had, by the end of the war, been provided by British railway companies, apart from the "Princess Christian" train, built by the Birmingham Railway Carriage and Wagon Company, was thirty, the companies concerned being as follows:—Caledonian one; Great Eastern, four; Great Western, eight; Lancashire and Yorkshire, three; London and North Western, seven; London and South Western, one; London, Brighton and South Coast, one; Midland, two; North Eastern, one; London and North Western and Great Eastern jointly, one; and London and North Western and London, Brighton and South Coast jointly, one.

The total number of vehicles supplied, including spare coaches and coaches for special purposes, was 518. All, with the exception of about thirty, were bogie stock.

In addition to the ambulance trains, the sub-committee undertook to supply the necessary spare parts and material for their maintenance.

When, again, the United States decided to take an active part in the war, her military authorities consulted with a deputation of the Railway Executive Committee (consisting of Sir Francis Dent, Mr. A. J. Hill, and Mr. G. J. Bowen Cooke), then at Washington for another purpose, and came to the conclusion that the best provision they could make for the transport by train of their sick and wounded in France would be by securing on their own account a supply of ambulance trains constructed in England according to the very latest pattern. The Railway Executive Committee, at the request of the War Office, agreed to meet these further requirements through their sub-committee, the arrangement being that the cost of the American trains should be refunded to the Executive Committee (on behalf of the companies concerned) by the War Office, which would recover from the United States Government the amounts paid.

The first order for these ambulance trains for the U.S.A. armies in France was given in August, 1917. It was followed by others, and by the time the war came to an end there had been delivered in France, for the United States Expeditionary Forces, nineteen complete standard ambulance trains, constructed by British railway companies as follows: Great Central, one; Great Eastern, one; Great Western, four; Lancashire and Yorkshire, three; London and North Western, four; London and South-Western, one; Midland, five.

In these nineteen trains there were 304 vehicles, all of the bogie type.

Spare parts and material for the maintenance of the trains were also provided by the sub-committee. Twenty-nine other trains for the American forces were either in course of construction or on order when the Armistice was signed.

Altogether the number of ambulance trains supplied and equipped by British railway companies for the use overseas of either the British or the American Forces was forty-nine, and the total number of vehicles forming these trains, or supplied separately for ambulance-train purposes, was 822.

As regards the application of the word "standard" to the trains in question, the fact should be stated that, whilst standardisation was aimed at throughout (and especially so from the time the Ambulance Trains for the Continent Sub-Committee was appointed), and whilst the adoption of this principle was of the greatest advantage in facilitating both construction and maintenance, there was, nevertheless, no rigid adherence to an established set of designs or ideas without any suggestion of still further improvement. The sub-committee in London were in constant touch with the Military Advisory Committee in France; Major Hosken kept them well-informed as to the results of practical experience in the working of the trains, and the possibility of embodying fresh improvements—in order to meet all emergencies and to provide still more efficiently for the care and comfort of the sick and wounded travelling by the trains—was ever a matter of close and anxious consideration.

So it was that, although the first of the ambulance trains sent overseas in 1914 were themselves the outcome, partly of experiences gained in the South African War of 1899–1902, and partly of much subsequent study of the whole subject by railway, medical, and military authorities in combination, the last trains to be supplied in 1918 embodied the results of continuous improvement based on the fresh experience gained, were a still further advance in combined completeness and simplicity of detail, and constituted almost "the last word" in the provision of a perfect type of rail-transportation facilities for military sick and wounded in time of war.

Shipment of the Ambulance Trains.

One further item of interest in regard to the ambulance trains for use overseas relates to the methods adopted for their conveyance from this country to destination.

Had there been a Channel Tunnel in existence, the sending of the trains to France would have been as simple and expeditious a business as that of sending them on a journey of equal distance in this country. The cost, also, would have been comparatively less. In the reverse direction the transport of the wounded to England would have been greatly facilitated, not only by the saving of transhipment, first from train to boat and then from boat to train, but, also, because the Continental ambulance trains, which carried many more wounded than the British trains, could then have come direct to England. As it was, the matter

of transportation—and especially so in the early days of the war—became a source of much difficulty and considerable anxiety. It involved, also, in the aggregate, a substantial cost.

Taken to the port of embarkation, each car had there to be raised bodily from the rails, slung round over the vessel on which it was to make the cross-Channel journey, lowered on to the deck, and then secured so firmly thereto that there would be no danger of the car falling overboard. It was not, however, every port in the country that had a crane capable of thus raising vehicles having an average weight of from twenty-eight to thirty tons and an average length of about fifty-seven feet.

Some of the coaches for the first ambulance train for overseas—that referred to on p. 202—were sent to France from Dover, and the dispatch of them from that port necessitated certain special arrangements. These included the laying there of an emergency siding connection, of 153 feet radius, from the Prince of Wales' Pier to Wellington Dock, to allow of their being taken to the spot where a 30-ton crane would lift them on to the s.s. *Quenast*, by which the cars were to be conveyed, one by one, to Boulogne. The work of laying the siding connection thus needed was begun at midnight on October 19th, 1914, and was completed ready for use by 9.30 a.m., on October 21st. The coaches arrived at Dover the same day and the vessel sailed with the first of them on the afternoon of the 23rd. The sixth and last left on the 29th. All were shipped by the staff of the South Eastern and Chatham Company's Engineer.

From Dover the work of dispatching ambulance trains overseas was transferred, first to the London Docks and afterwards to Tilbury in order, more especially, that advantage could be taken of the 50-ton cranes which the Port of London Authority had available there. The Admiralty, also, supplied a transport (originally a cargo steamer) which was capable of carrying four long bogie-coaches on deck instead of only one, as in the case of the s.s. *Quenast*. When the Ambulance Trains for the Continent Sub-Committee got to work, in January, 1915, they arranged that gangs of expert railwaymen should not only load up the vehicles on the boat but unload them again at the port of destination in France—then either Boulogne or Dunkirk—some lifting gear specially made by the British railway companies being sent there for the purpose. At the outset the railwaymen entrusted with the work went to France with each fresh lot of vehicles; but subsequently it was decided to have one gang of men at the port of embarkation and another at the port of debarkation. This meant that at Dunkirk, owing to the frequency of air-raids, a dug-out had to be specially provided for the railwaymen. Later on the War Office arranged for the vehicles to be dispatched from Portsmouth—where powerful cranes, located there for dealing with heavy naval guns, were available—to Dieppe or Havre, though the work of loading up at the port of embarkation was still done by railwaymen.

On the opening of the Channel Ferry from Southampton, the ambulance train made by the London and South Western Railway Company for the U.S.A. Army in France was sent across by this means. The other

ambulance trains for the American troops went either to Dieppe or to Cherbourg by this route. The vehicles were, in each instance, run direct on the ferry from the railway lines at Southampton and direct from the ferry on to the rails again on the other side.

Notwithstanding the risks involved in shipping such consignments as full-sized bogie carriages in war time, only four of the 800 and more ambulance vehicles to be transported across the Channel failed to reach their destination, and a substantial portion of these four was recovered and again utilised.

How cordially the services rendered by the sub-committee were appreciated by the military authorities was well shown by the following letters, received by the Railway Executive Committee from the War Office :—

July 15th, 1916.

I am commanded by the Army Council to express their satisfaction at the successful delivery in France of eighteen complete ambulance trains constructed by the Railway Executive Committee to the order of the War Office, and one additional train presented by the Princess Christian. The results of the labours of the Ambulance Trains for the Continent Sub-Committee have received universal praise, and the Council recognise that the success which has attended their efforts has been largely due to the technical skill of the Sub-Committee and the unfailing trouble they have taken in the design, construction, organisation and transport of these trains.

I am to request you to convey to the members of the Sub-Committee and to their Secretary, Mr. H. J. Moore, the Council's appreciation of their services in a direction which so closely affects the welfare of the troops at the Front.

B. B. Cubitt.

War Office,
London, S.W.1.
July 19th, 1920.

Sir,

As the work of the " Sub-Committee on Ambulance Trains for the Continent " is now approaching completion, I am commanded by the Army Council to desire you to convey to the individual gentlemen who have served as members of this Sub-Committee the Council's high appreciation of the valuable services rendered by them.

The efficiency and celerity with which the Sub-Committee dealt with the design and supply of ambulance trains and spare parts for the various Theatres of War undoubtedly helped in a marked degree towards the successful termination of the late war and in alleviating the sufferings of the wounded, and latterly have also proved of great assistance in coping with the many problems which arose subsequent to the conclusion of the Armistice. It is understood that this work was carried out by these gentlemen in addition to their heavy duties under their respective railway companies, and the Council desire to record their recognition of the patriotic spirit which animated the members of the Sub-Committee.

I am, Sir,
Your Obedient Servant,
(Sgd.) B. B. Cubitt.

The Secretary,
Standing Committee of General Managers,
35, Parliament Street, S.W.1.

From Battlefield to Britain.

Under the stress of war, Boulogne became what has been aptly described as "a city of hospitals." The work of unloading the wounded from ambulance trains to ambulance motors for conveyance to these hospitals was done with such expedition that a train of 123 wounded is known to have been cleared in nineteen minutes and another of 264 wounded in fifty-three minutes. During the month of March, 1915, the number moved at Boulogne either from the trains to the hospitals or from the hospitals to the ships was 33,941.

When passing all these arrangements and achievements under review in a speech he made in the House of Commons on April 22nd, 1915, Mr. Tennant, then Under-Secretary for War, spoke of them as "subjects of legitimate pride and gratification," and continued :—

> It was no uncommon feature of the battle of Neuve Chapelle that the wounded should be back at hospitals in London within twenty-four hours of their wounds having been received. I had the pleasure of seeing a Lieutenant-Colonel in one of the Highland regiments who was wounded at Neuve Chapelle whilst in the trenches between the hours of 1.30 and 2 o'clock in the afternoon. He became unconscious on receipt of his wound, and he awoke to consciousness soon after 3 o'clock in comfort in a bed in a hospital eleven miles behind the firing-line, with his wounds dressed.

More remarkable still was the account given in the *British Medical Journal*, August 11th, 1917, of the expedition with which the transfer of wounded from battlefields in France to hospitals in London was effected. The action that led to the carrying of the Messines Ridge began at daybreak on June 7th, in that year, and at 2.15 in the afternoon of the same day ambulance trains with men wounded in the action were entering Charing Cross Station.

Distribution at Home.

No sooner was the fact realised that a large number of hospitals would be wanted for the nursing of the wounded than offers of accommodation began to pour in from every part of the country. Town vied with town and village with village in their eagerness to have the honour of tending those who had suffered in the conflict. With the use of ambulance trains, in which the patients would travel with a maximum of attainable comfort, distance from the port of arrival became immaterial; and, in the result, practically every town in Great Britain had a hospital of some kind, great or small, in which the sick and wounded were received. Apart from the recognised military hospitals, of which full use was made as a matter of course, general hospitals everywhere hastened to place every bed they possibly could at the disposal of the military authorities. Poor Law and other institutions did the same; but the more remarkable factor in the situation was the way in which new hospitals were specially organised for the occasion. Red Cross hospitals, Voluntary Aid Detachment hospitals, and others besides, were opened in large numbers in all

kinds of public buildings, including schools and chapels, while private houses were also extensively used.

The effect of this distribution was in every respect excellent. A concentration of the patients in any one town or locality, or even in a limited number of towns or localities, would have been impracticable, whereas the methods adopted had the effect, not only of making the best possible use of existing accommodation in every section of the country, but of utilising the services of local doctors in such a way that they were able to look after the sick and wounded in hospitals in their own neighbourhood while still carrying on their private practice. In other words, the military element was cared for without neglect of the civil population. Great advantage followed, also, from the services which ladies resident in the towns or districts concerned were able to render at the local hospitals as nurses, cooks, or in other capacities.

As already indicated, the work of distribution was at first controlled from Southampton; but in 1917 it assumed such proportions and required such frequent communication with other branches of the War Office that the headquarters were transferred to Adastral House, Thames Embankment, where Sir William Donovan, as Director of Medical Services, Embarkation, had a large staff and controlled an exceptionally efficient organisation carrying on a work that became, at times, a very laborious, exacting and complicated business indeed.

The basis of the organisation was the receipt by the Director of Medical Services, not only of information as to the prospective arrival of hospital ships at certain ports and the number of patients they were conveying, but, also, of daily messages, by telegraph or telephone, from each main hospital in the kingdom as to how many beds were available for sick and wounded troops either in that institution or at any auxiliary hospital which might be associated with it.

Special arrangements with the Postmaster-General allowed of the staff at Adastral House being put into immediate communication, whenever they desired, with any hospital in any part of Great Britain. In this way the Director of Medical Services knew the exact position day by day as to the accommodation then available, and could give directions to the Deputy-Assistant-Director of Medical Services, or other officer, at each of the ports of arrival concerning the destinations to which the patients should be sent. Adastral House was thus kept in touch with the situation as a whole, and was able to ensure both that patients would not be sent to any town where the hospitals were already full and that what was done at one port would not be likely to clash with the action taken at another.

On receiving the said directions from London, the Deputy-Assistant-Director at the port concerned would draw up his programme and make the necessary arrangements in respect to ambulance trains, etc., with the local railway authorities.

The destination of each patient depended, more or less, on the nature of his disability. Certain hospitals specialised in the treatment of par-

ticular injuries or ailments, and it was to a hospital of this type that a patient suffering from any one of such injuries or ailments was sent by preference. An effort was also made to send a patient to a hospital near to his own home in order that he could be visited more readily by his relatives; but this was not always practicable, and more particularly so in specialised cases. All that could then be done was to send a man as near to his home as circumstances would permit. There were special hospitals, also, for Canadian, Australian, New Zealand and other Dominion troops, so that, altogether, the arrival of each hospital ship meant a good deal of sorting out.

It was subject to such conditions as these that the Deputy-Assistant-Director at the port would draw up the first draft of his programme—only, perhaps, to find it subject to many revisions and alterations before it could be regarded as complete. Fewer or more cases might arrive than had been expected; hospitals reserved for special cases might announce at the last moment that they were full up; these cases would then have to be sent on to another destination, and perhaps by a different train; delays might be caused by bad cases or by the arrival of a boat at low water, when more time would be required for the disembarkation—and so on, and so on.

Let us assume, however, that all these and other possible conditions had been duly met and that the ambulance train had been dispatched from the port of disembarkation on its errand of mercy. The function it then fulfilled was a triple one since ambulance trains at home provided, not alone for the distribution of sick and wounded from ports to the interior of the country but for the transfer of patients from one hospital to another, or, in the case of Colonials, from one place in the interior to the port whence they were to start on their journey home.

The transfer from one hospital to another was generally arranged when the recovery of a patient, who might have been sent to one of the special hospitals in the first instance, was not expected for some months. He was then moved near, or nearer, to his home; though this was not done in the case of patients whose recovery was not likely to be long delayed. Even with this limitation, the removal of transfer cases became a big business in itself, and one that involved the setting up of a separate department at Adastral House. An ambulance train starting from a port might have to stop at any number of places up to seven or eight, either *en route* or on the return journey, in order to pick up transfer cases. This could more especially happen in the Eastern Counties, where the train would make something like a circular tour instead of having a straight run. In some instances empty ambulance trains were sent from a port to towns in the Midlands or elsewhere in order to deal with transfer cases or to convey Colonials to the port from which they were to return home.

The final stage of a typical programme at Dover for the running of an ambulance train, was, under all these conditions, somewhat as follows:—

Ambulance boat, *Jan Breydel*. Due 2.30 p.m. Berth No. 2. Number of

ambulance train, 16. To convey Canadians to Taplow (Great Western Railway), and thence proceed to Temple Meads, Bristol, with 100 cot and 60 sitting cases, together with three cot patients picked up at Addison Road for transfer to Temple Meads. On the return journey, stop at Taplow to set down five cot Canadians, and at Addison Road to set down one cot case, all from Temple Meads.

Cot trains and emergency trains of the standard type ran intact in both directions, setting down or picking up, whenever necessary, without being divided. In the event of a number of patients in the aforesaid train from Dover to Temple Meads being sent to a destination off the direct route, they would travel in extra coaches which, accommodating both cot and sitting cases, would be detached at (say) Reading, a medical staff taking charge of the portion so detached and going with it to destination.

Arrangements at Dover.

The first boat conveying wounded to Dover arrived October 12th, 1914. Others followed on succeeding days. Those whom they landed were members of the British Naval Brigade, and, also, Belgian soldiers who had suffered in the German advance on Antwerp and had been taken to Ostend, *en route* to England. So numerous were the arrivals that Dover Town Station was closed to the public early on the morning of October 14th in order to accommodate the ambulance trains then being rushed to Dover for the conveyance of the sufferers to Chatham, London, Gosport, Harrogate and elsewhere.

At this time the new Marine Station at Dover had not been sufficiently completed to permit of the use of it for ambulance trains, and such completion was not then asked for by the authorities owing to the view being taken that any indiscriminate landing of wounded, of whatever nationality, and whether from hospital ships or refugee ships, at what had become an essentially military port, was inexpedient. In these circumstances the earlier of the boats which did bring wounded to Dover had to be dealt with at the Admiralty Pier Extension; although here, also, adequate facilities for the carrying on of the work under the best conditions were lacking.

Between October 12th and October 18th the number of wounded received at Dover was about 1,500, namely, 1,000 British and 500 Belgians. Dover was, in fact, soon declared to be "full up" and unable, owing to her limited facilities and accommodation, to deal with any more wounded, for the time being. Further boats, accordingly, were sent on to Folkestone.

Another expedient adopted was that of sending on the further boatloads of wounded to Southampton. Towards the end of 1914, however, the pressure of combined military and ambulance traffic at that port became very great, and on or about December 23rd, orders were given that, with a view to affording some degree of relief to Southampton, the Marine Station at Dover was to be so far completed *within one week* that

the wounded could be brought ashore at one of the new main berths and carried thence direct to the ambulance trains standing in the station immediately alongside.

Considering that the platforms had not then been filled in, that the station was still without a roof, and that much work in other directions also required to be done before traffic could be commenced, the order thus given seemed to be one scarcely possible of achievement. But the Engineering Department of the South Eastern and Chatham Railway made a determined effort. All attainable labour in and around Dover was secured ; gangs of men succeeded one another without intermission, night and day, throughout Christmas and the New Year, and on January 2nd, 1915, the first of a long succession of ambulance trains was dispatched from the Marine Station at Dover, which became, in fact, the principal landing point for military wounded sent home from the Western Front.

Such were the facilities offered by this new station that it was possible to load at the different platforms no fewer than six ambulance trains simultaneously with wounded from two boats. The distance from the nearer boat to the rear of the nearest ambulance train, inside the station, was only about twenty yards, and even for this short distance the wounded passing from the one to the other were completely under cover. The wide gangway was a covered one, resembling a short tunnel, and, on reaching the quay, the wounded passed, first under a covered corridor, provided with wind screens on each side, and then into the station itself. Stretcher cases were met at the end of the gangway by R.A.M.C. men with two-wheeled trolleys on which the stretchers were placed for conveyance to the ambulance trains ; though special cases were first taken to a wooden enclosure on the nearest platform where they were examined by the medical officer or officers in attendance. Throughout the whole period of the war, every ambulance train dispatched from Dover Marine Station was also attended by one or both of two ladies, Mrs. Bird and Mrs. Ellery, who, from the Red Cross Store, distributed cigarettes, chocolates, pillows, or other " comforts " among the sick and wounded ; and this they did, between them, even when, as happened on some occasions, there was a continuous stream of wounded from eight o'clock a.m. one day until 3 a.m. the following day.

The average time taken at Dover to load up an ambulance train was forty-five minutes ; and the average time required to disembark an average boat-load of patients (say 200 cot cases and 300 walkers) and transfer them to the two trains which were the average requirement per boat was about two hours. As many, however, as 1,500 cases have been landed at Dover from two boats—a large one and a small one. All the arrivals at that port from the beginning of 1915 were from either Calais or Boulogne.

The following table gives particulars of the number of sick and wounded (officers and men) conveyed by ambulance trains from Dover Marine Station in the period from January 2nd, 1915, when the regular service from that station began, to February 28th, 1919 :—

Year.	No. of Wounded.	No. of Boats.	No. of Trains.
1915	124,101	490	878
1916	246,225	782	1,742
1917	433,840	1,362	2,592
1918	404,301	1,330	2,307
1919 (Jan. & Feb.)	52,039	112	262
Total . . .	1,260,506	4,076	7,781

It will be seen that the number of loaded trains dispatched from Dover was 7,781 ; but, inasmuch as these would all require to return to Dover, conveying *personnel* only, the total number of ambulance specials actually run was 15,562. The table further shows that the heaviest year at Dover was 1917, when 433,840 officers and men, brought there in 1,362 boats, were dispatched from the Marine Station in 2,592 trains.

The following further table gives the months during which the number of patients disembarked at Dover and conveyed thence by train exceeded 35,000 :—

Year.	Month.	No. of Wounded.	No. of Boats.	No. of Trains.
1916 . . .	July . . .	49,080	128	327
	September . .	36,468	106	243
1917 . . .	April . . .	54,815	132	296
	May . . .	47,248	135	284
	June . . .	37,780	118	220
	August . . .	54,436	175	336
	September . .	38,154	126	219
	October . .	54,377	116	307
	November . .	45,039	161	273
	December . .	35,305	119	221
1918 . . .	March . . .	43,035	128	223
	April . . .	66,343	229	372
	August . . .	38,588	113	223
	September . .	44,850	137	258
	October . .	60,725	193	335

The heaviest month of all is thus shown to be April, 1918, when 66,343 officers and men landed from 229 boats and were sent away in 372 trains.

For the heating of the ambulance trains waiting in Dover Marine Station to be loaded up, and still forming the temporary home of medical officers and ten N.C.O.'s and men (though not of the two nursing sisters, who were specially provided for each trip), there was an arrangement by which steam was passed along them from a boiler-house between the hours of 6 a.m. and 11 p.m. This method of heating could not, however, be applied to more than eight ambulance trains at a time, and there were occasions when, of the twenty ambulance trains allocated to Dover, as many as eighteen might, owing to delay in the arrival of the ambulance boats, be waiting there. Under conditions such as these, the steam-heating of the trains in excess of the said eight was provided for by attaching a locomotive in steam first to one and then to the others in succession and as necessary.

There was, also, an overhead system for supplying the trains with water while they stood in the stations.

In addition to the ambulance trains proper, about forty coaches, some for cot and some for sitting cases, were held in reserve at Dover for attaching to the regular ambulance trains in the event of more accommodation being required.

Arrangements at Southampton.

Hospital ships arrived at Southampton alongside a large shed in which an ambulance train would be waiting. Patients unable to walk were carried from the ship on stretchers down a covered gangway into the shed. At the end of the gangway the stretchers were placed on specially-constructed trolleys and wheeled a short distance along the shed to a screened-off sorting-place where the patients on them were received by members of the R.A.M.C. staff and examined so far as might be necessary in order to allocate them to the different hospitals open to receive wounded or invalids. The patients, still on the stretchers, were then lifted with the utmost care into the ward-cars and placed on the cots allotted to them. Meanwhile the "walking cases" would be finding their way into the cars, and the whole procedure was generally accomplished with such expedition that the average time between the placing of the gangways in position and the departure of the ambulance train was only about forty-five minutes.

Other arrangements made at Southampton included, besides a generous distribution of "comforts" among the wounded, the provision of an exceptionally large boiler from which steam could be supplied during cold weather for the simultaneous heating of eight ambulance trains berthed on separate sidings in the docks and, for the time being, unconnected with locomotives. Water for culinary and lavatory purposes was furnished to the trains by means of a special overhead supply. Gas for the provision of hot meals and, also, for the illumination of vehicles not fitted with electric light, was sent from the London and South Western Railway Company's Locomotive, Carriage and Wagon Works at East-

leigh by means of tanks on railway mountings. Then, also, in order to keep the trains in a presentable appearance after long trips, the employment of a large gang of cleaners was necessary; though these railway-workers looked after the outside of the cars only, interior cleaning being undertaken by the R.A.M.C. *personnel.*

In addition to the regular ambulance trains sent to Southampton as ordered by the responsible medical authorities, the London and South Western Company provided there two permanent emergency trains, each made up of corridor coaches and a dining-saloon, for the conveyance of sitting cases only.

These permanent emergency cars were, in turn, supplemented by the keeping constantly available at Southampton Docks of a number of modern 60-feet corridor coaches which could be attached, when necessary, to either class of ambulance train for sitting cases, access being obtained to them by means of connecting gangways.

Still further, the London and North Western Company provided at Southampton some up-to-date 42-feet vestibule bogie vans for the conveyance of lying-down cases, and the London and South Western Carriage Department doubled the capacity of these vans by constructing special trestles which allowed of stretchers with comfortable beds being fixed firmly in position above those that were placed on the floor of the van, no other fittings being necessary. Each of the vans could take twenty cases, and each was fitted with an overhead system of heating and ventilation.

From July, 1916, to the end of 1918 there were available at Southampton, in addition to the other transport facilities already mentioned, two complete trains, each composed of six London and North Western vans (arranged as stated), a London and North Western dining-car or corridor coach, and two brake coaches. Each train had accommodation for 120 cot cases *plus* a medical personnel of one officer and ten men, the latter having their living and sleeping quarters in the corridor and brake coaches.

Other emergency ambulance trains were made up at, or sent to, Southampton as required to meet the inevitable pressure occurring from time to time, and thus it was, for instance, that the rush on July 7th, 1917, was successfully handled. Thirteen ambulance trains used on that occasion were supplemented by nine emergency corridor trains (the running of second trips increasing the number of train journeys to twenty-nine), and, also, by twenty-four separate corridor carriages and sixteen vans added to the regular trains. In this way the company were able, on the day in question, and in addition to all the other transport demands made upon them, to dispatch from Southampton, for distribution among the hospitals of England and Scotland, no fewer than 6,174 sick and wounded in the course of twenty-four hours.

Putting in tabular form the records established on the London and South Western in respect to ambulance-train traffic from Southampton for the busiest day, week, month and year respectively, one gets the following figures :—

Period.	Date.	No. of Trains.	No. of Invalids.
Day	July 7th, 1916 . .	29	6,174
Week . . .	July 3rd–9th, 1916 .	151	30,006
Month . . .	July, 1916 . . .	391	68,492
Year	1916	2,060	329,530

The approximate distance covered by the trains run in 1916 was 740,000 miles. This figure, allowing for the return journey, gives an average outward journey per special of about 180 miles. The shortest single run from Southampton was to Eastleigh, a distance of five and a half miles, for which fourteen minutes were allowed, and the longest was to Strathpeffer in Scotland, a distance of 624 miles, for which the time allowance was twenty hours and thirty minutes.

Between August 24th, 1914, and December 31st, 1918, the number of ambulance train specials dispatched from Southampton Docks was 7,822, and the number of invalids conveyed in them was 1,234,248. Included in the last-mentioned figure were 233 sick or wounded members of Queen Mary's Army Auxiliary Corps; 13,857 Indians; 8,488 Americans and 9,342 Belgians, together with 27,656 sick or wounded German prisoners and 248 Austrians.

All the figures thus far given relate exclusively to special trains run from Southampton Docks conveying patients arriving there by boat; but the ambulance-train traffic over the South Western system as a whole was much heavier than this. Eastleigh, for instance, was a clearing-hospital for Southampton, and sufferers taken there by train direct from the docks were afterwards sent on by other trains to other destinations. The South Western Company also received a good deal of ambulance-train traffic originating on other companies' lines. That coming from Dover for the Midland system passed first on to the South Western at Clapham Junction, and many Australians and New Zealanders collected from hospitals in various parts of the country were also brought on to the South Western. Thus the total number of ambulance trains of all kinds dealt with on the South Western system from the outbreak of the war to December 31st, 1918, was 10,332, and the number of patients conveyed in them (including 91,371 officers) was no fewer than 1,848,623.

Receiving Stations.

The following is a list of the receiving stations (196) to which military ambulance trains conveying sick and wounded were sent either from Dover or from Southampton or, as occurred in many instances, from both —

Aberdeen
Addison Road
Aintree
Aldershot
Ampthill
Avonmouth
Axminster

Bangour
Basingstoke
Bath
Belmont
Bentley
Berrington
Berwick
Bexhill
Bickley
Birkenhead
Birmingham
Bletchley
Bournemouth
Boscombe
Bradford
Brentwood
Brighton
Bristol
Brockenhurst
Brocton
Bromley South
Brookwood
Bulford
Bury St. Edmunds.

Cambridge
Cambuslang
Canterbury
Cardiff
Carlisle
Catford
Charing Cross
Chatham
Chelmsford
Chelsea
Cheltenham
Chester
Chichester
Chislehurst
Christchurch
Clacton-on-Sea
Clandon
Clapham Jct.
Colchester
Cosham
Court Sart
Coventry
Crewe
Cromer

Deal
Derby
Devizes
Devonport
Dewsbury
Dorchester
Dundee
Durham

Eastbourne
East Croydon
Eastleigh
Edmonton
Edinburgh
Egham
Epsom
Exeter

Farnborough
Faversham
Fawkham
Fovant Railhead
Fratton

Gillingham
Glasgow
Gloucester
Gosforth
Gosport
Grantham
Gravesend
Greenock
Greenwich
Guildford

Halesworth
Halifax
Hamworthy Jct.
Harlow
Harrogate
Haywards Heath
Hereford
Herne Bay
High Barnet
Holmwood
Huddersfield

Ingham
Ingress Park Sdg.
Ipswich

Keighley
Kendal

Lancaster
Leeds
Leen Valley
Leicester
Leigh
Lichfield
Lincoln
Liphook
Liverpool
Lyme Regis
Lyminge

Maidstone
Malmesbury
Manchester
Margate Sands
Mayfield
Minster Jct.

Napsbury
Neath
Netley
New Barnet
Newbury Park
Newcastle-on-Tyne
Newcastle-under-Lyme
Newmarket
Newport
Newton Abbot
Northampton
Norwich Thorpe
Nottingham

Orpington
Oswestry
Oxford

Paddington
Paignton
Paisley
Penrith
Perth
Plymouth
Poole
Portsmouth
Preston

Ramsgate
Reading
Rubery

Saffron Walden
Salisbury
Selly Oak
Sheffield
Sherbourne
Shorncliffe
Shrewsbury
Sidcup
Sidmouth
Sittingbourne
Snaresbrook
Southall
Southend
Southport
Stafford
Stoke-on-Trent
Stourbridge
Stratford
Stratford-on-Avon
Strathpeffer
Sunderland

Taplow
Templecombe
Tidworth
Tonbridge
Torquay
Torre

Victoria (London)

Walmer
Waltham Cross
Walton-on-Thames
Warminster
Warrington Arpley
Waterloo (London)
Well Hall
West Croydon
West Gosforth
West Marina
Weymouth
Whalley
Whitchurch
Willesden
Wimborne
Winchester
Windermere
Windsor
Witley
Wrexham

York

The distances travelled by a considerable proportion of the ambulance trains in the interests of a widespread distribution of the wounded will, perhaps, be still better understood if the fact is added that between August, 1914, and November, 1918, the number of loaded military ambulance trains which ran over the lines of the Caledonian Railway Company was 962, namely, 763 worked to Scotland from Southampton and 199 which had come from Dover. The destinations of the trains were: Glasgow, 522; Edinburgh, 97; Perth, 73; Dundee, 86; and Aberdeen, 184. After having discharged their load, all these trains travelled back over the Caledonian lines on their return to the port from which they had started. The company had, therefore, to deal with 962 ambulance trains twice over, making a sum total of 1,924.

Other Ports.

While Southampton and Dover were the ports at which sick and wounded troops mainly arrived in this country for conveyance to inland hospitals by ambulance trains, various other ports were also utilised, though to a much less extent. Avonmouth, Devonport and Liverpool were taken advantage of more especially in regard to cases from the Mediterranean and the Far East.

At Avonmouth, for example, 1,600 officers and 23,500 men—a total of 25,100 wounded—were received. They were taken on mainly to London, Bristol or Manchester. In addition to these, 660 officers and 12,000 men from various camps in England were conveyed to Avonmouth for oversea destinations. Altogether over 200 loaded ambulance trains were dealt with at the port during the war. When, in the winter months, the trains had to wait several hours for the arrival of the ambulance transports, an engine was attached to them for the steam-heating of the coaches occupied by the medical staff.

From Hull and Boston ambulance trains conveyed many thousands of sick and infirm repatriated British prisoners of war, and especially so after the signing of the Armistice; though many had been dealt with there before then. All were forwarded, in the first instance, to London as a distributing centre. Direct to the Port of London came sick and wounded from various theatres of war. Sick and infirm repatriated prisoners were also received there. Leith was found a convenient port for dealing with invalids among repatriated prisoners of war, and, also, wounded troops from Russia.

Totals of Military Ambulance Train Traffic.

From the outbreak of the war to April 7th, 1919, the total number of sick and wounded received at ports in the United Kingdom and conveyed therefrom in military ambulance trains was 2,680,000. This figure includes repatriated British prisoners of war, together with Americans, Belgians, Indians, Italians, and 46,000 German and Austrian

prisoners, but does not include transfers or cases taken to the ports for destinations overseas.

The heaviest day of all for the arrival of war-invalids in this country was July 6th, 1916, when the total number received was close on 10,000. The aggregate accommodation on the whole of the ambulance rolling stock available in the United Kingdom for military cases was 8,300, namely, 3,300 cot and 5,000 sitting cases; but the transport of 10,000 on the day mentioned was effected by reason of the fact that some of the trains made double journeys. The heaviest week during the war period was July 3rd–9th, 1916, when the total number of patients landed was 47,000.

"Hospital Ships" become "Ambulance Transports."

In a footnote on page 197, it has been stated that the number of hospital ships eventually brought into use was about 100.

The designation "Hospital Ship," as applied to a vessel employed in conveying sick and wounded from overseas to ports in this country, was a misnomer. Hospital ships were not, strictly speaking, "hospitals" at all since there was no idea of using them for the treatment of patients as distinct from their transfer, under suitable conditions, from one point to another, the sufferers being removed and sent on to hospitals proper at the earliest opportunity. They were, in effect, no more than marine ambulances or ambulance ships, bearing the same relation to sea transport that motor ambulances and ambulance trains did to transport on land.

They nevertheless fulfilled all the conditions applying to "Hospital Ships" under the terms of the Geneva Convention and the Hague Convention, and they met all the requirements laid down as entitling them to complete freedom from attack or interference on the part of the enemy.[1]

Yet, almost from the first, Germany showed little inclination to respect what was, in effect, equivalent to one of the laws of nations as applying to the said ships. Several were sunk by her, and in January, 1917, she declared open war upon them, announcing that thenceforward her submarines would sink any of our hospital ships they found within the limits of the "war zone." The reason alleged was that the vessels in question were being used for the transport not only of sick and wounded but of troops and munitions, as well. There was not a word of truth in this allegation, but the declaration of war against them was remorselessly followed up. Hospital ships, filled with sick and wounded, were now sunk at sight under conditions of the grossest inhumanity, with the result that many lives were lost and a climax given—if this were really possible—to Germany's record of savage and merciless crimes.

The day was to come, however, when these foul deeds on the part of

[1] Under the provisions of the Hague Convention, all hospital ships were painted white throughout, had yellow funnels and displayed a large Geneva Red Cross, illuminated throughout the night watches.

Photo by] [*Lieut. H. Rickard.*

A Story in Two Pictures.

Before the war, the Great Western Railway s.s. *St. Andrew* was one of three fast turbine steamers employed on the Fishguard and Rosslare service. Commandeered by the Admiralty to discharge the duties of a Hospital Ship, she underwent a complete change in appearance, the black hull being converted into a white one with a broad green band from stem to stern, intersected amidships by the "Red Cross" on a white ground. When the sinkings of Hospital Ships by the enemy became unsupportable, the *St. Andrew*—in accordance with the policy then adopted—had her designation changed from Hospital Ship to Ambulance Transport; she assumed the aspect of a camouflaged troopship, and, though still conveying wounded from France, defying the enemy rather than claiming his protection as before, she now helped to carry, on her decks, across to France, in the Spring and Summer of 1918, those reinforcements who finally assured us of victory.

The above illustrations show the *St. Andrew* as Hospital Ship and Ambulance Transport respectively. The lower one is from a photograph taken off Havre.

[*To face p.* 222.

THE INTER-RAILWAY CHALLENGE SHIELD.

(The scenes depicted at the top of the shield, in repousée, are those of the Good Samaritan, St. John's Gate, and ambulance work on the occasion of a railway accident.)

ENTRAINING THE WOUNDED AT SOUTHAMPTON.

[*To face p.* 223.

the enemy were to recoil upon his own head and become one of the means that led to his eventual defeat.

England endured for some time, as best she could, though with feelings of ever-increasing horror, the stories of still more sinkings of hospital ships at sea; but definite action was taken in March, 1918. The British Government then renounced the idea of running any more "hospital ships" flying the Red Cross flag and mutely claiming the protection of an enemy resolved to disregard all claims of common humanity. The distinguishing marks of hospital ships were withdrawn, and from this time the sick and wounded were brought home in what were called "ambulance transports"—vessels painted and camouflaged like ordinary troopships, and making no appeal whatever to the merciful considerations of an enemy who was now practically defied to do his worst, the more so as he would no longer be able to distinguish the one class of vessel from the other.

This, however, was not all. When the hospital ships ceased to be so called and became ambulance transports instead, the Government were perfectly justified in using them as troop transports, as well; and the arrangement made was that, whilst sick and wounded should alone be brought in them from France, troops could be conveyed by them on their return to France, subject to the condition that such troops were to be accommodated on the decks only, and were not to use the wards in which the sick and wounded would be placed. This meant that it became possible to send troops across to France in substantially greater numbers than could otherwise have been done. The increased transport facilities thus made available were, indeed, of great military advantage in the spring and summer of 1918, when reinforcements were being rushed across the Channel with the utmost speed for that final advance against the enemy which was to effect his complete overthrow.

So, in the words of the Psalmist, it might be said of the enemy—"He made a pit, and digged it, and is fallen into the ditch which he made."

Ambulance Work by Railwaymen.

No account of the organisation and running of ambulance trains at home would be complete without some reference to the assistance rendered by railwaymen themselves in the handling, at railway stations, of the sick and wounded whom those trains conveyed. The story of what was done in this connection deals with an especially interesting phase of British railway conditions, and it further shows how railwaymen remaining at their posts in the railway service might still engage in war work of an essentially useful and beneficent nature.

In the early '90's of the last century there was considerable public discussion on the subject of railway accidents and of casualties to individual railwaymen in the pursuit of their calling; but while a great deal was said as to the need for more definite action, legislative or otherwise, in order to prevent accidents as far as possible, the fact was also recog-

nised that the risks more or less inevitable to railway operation could not be altogether overcome. From this point of view it seemed most desirable that railwaymen should themselves be trained in the rendering of "first aid," either to one another or to the travelling public, when accidents did occur.

Much activity in pioneering the movement directed to the realisation of this aim was shown by the St. John Ambulance Association, with which the railway centres formed in England and Wales have all been affiliated.

At the outset, railway workers started and conducted ambulance classes on their own account and at their own expense; but, in proportion as the railway companies came to recognise alike the beneficence and the practical utility of the movement, they extended to it much sympathetic support, with the result that ambulance work is now carried on in connection with practically all the leading railways. Under the principle generally adopted (with variations in procedure in particular instances), an Ambulance Centre formed at the headquarters of each company becomes the central organisation for the whole of the company's system, exercising general supervision and direction over the classes established at the different stations, and carried on there in each instance by a local committee with the help of an invariably very active secretary.

The first Railway Ambulance Centre in connection with the St. John Ambulance Association was formed on the North Eastern Railway in 1895. The next centres established were those on the Great Western and the Great Eastern in 1896 and on the London and North Western and the Lancashire and Yorkshire in 1897. Other companies which followed were—the Cambrian, 1898; the London and South Western and the Cardiff, 1899; the Midland and Great Northern Joint, 1900; the Furness, 1902; the Metropolitan and the Cheshire Lines, 1904; the South Eastern and Chatham, 1905; the London, Brighton and South Coast, 1906; the Hull and Barnsley and the Alexandra Docks and Railway, 1907; the Maryport and Carlisle, 1913; the Great Central, 1914; and the North Staffordshire, 1916.

Instruction at the railway classes is given by thoroughly competent teachers, though it necessarily differs from that given at non-railway classes on account of the differences in the conditions affecting accidents on railways and those attending, for example, ordinary street accidents. In the case of the former the training is, to a great extent, of a special type, and measures are adopted in order to ensure that those who undergo it attain to the highest possible efficiency. To this end, not only is the knowledge and skill acquired by members of railway ambulance classes thoroughly tested at the examinations held, but interest in the work is stimulated by the presentation of certificates, vouchers and medallions, by local competitions on individual railways, and by an Inter-Railway Competition. The local competitions for each railway company may, under normal peace-time conditions, number six or seven annually, and be followed by a general competition, at headquarters, for a challenge

shield and prizes offered by the directors of the railway concerned. The teams taking part in this general competition gather from all parts of the system, and the successful team becomes, in turn, the representative of the company in the competition for the Inter-Railway Ambulance Challenge Shield, which, made of oxidised silver, and of extremely artistic design, bears the following inscription :—

St. John Ambulance Association, being the Ambulance Department of the Grand Priory of the Order of the Hospital of St. John of Jerusalem in England. Presented for annual competition in commemoration of the longest reign in English history, to encourage ambulance work on railways. 6th May, 1897.

The last of these annual Inter-Railway Competitions for England and Wales prior to the war was held in April, 1914, and was joined in by twenty-six teams. The Challenge Shield was won on that occasion by the representatives of the Lancashire and Yorkshire Railway. With the outbreak of the war in the following August came a suspension, for the time being, of these trials of skill concerning which a writer in *The Railway News*, in giving an account of the 1912 Inter-Railway Competition, said :—

The tests to which the teams are subjected are of a most rigorous and practical nature, comprising both individual and team examinations, and it need hardly be said that to gain a position in the final round is evidence of an absolutely first-class knowledge of ambulance work. It is, therefore, the high-water mark of ambulance skill to carry off the shield.

On the Scottish railways, the ambulance movement is based on the same general principles as those followed on the English railways. The St. Andrew's Ambulance Association takes the place of the St. John Ambulance Association, but there is a like system of centralised control, supplemented by a devolution of local work to local committees. Three of the five " parent " railway companies have what are termed " Ambulance Brigades," and these are either affiliated to the St. Andrew's Association or work under its auspices. The two other railway companies do not have brigades, but they, also, act in regard to ambulance matters under the auspices of the Association.

Each Ambulance Brigade comprises a number of Ambulance Companies operating in certain districts ; and each company is, in turn, composed of sections taking charge of smaller districts or of particular stations. The Brigade Executive Committee is formed by the commandant, treasurer and secretary, with the addition of the commandant of each company in the brigade ; and the special function of this executive committee is to control the whole of the ambulance work on the system and make such recommendations or suggestions to the railway company as may be found desirable for the development or improvement of that work.

How sympathetic the Scottish railway companies in general are towards the movement may be judged from the following examples of the practical support and encouragement given by them to the brigades and sections :—

(1) Payment of the class fees of first and second-year pupils who pass their examinations.

(2) Provision, free of charge, of ambulance hand-books to first-year pupils who pass their class examinations.

(3) No charge for use and lighting of halls or for section equipment.

While specialising in all forms of railway accidents, the instruction given also deals with street or other accidents, together with cases of poisoning, suffocation, etc., likely to occur outside the working of railways.

As on the English, so, also, on the Scottish railways there were, prior to the outbreak of the war, annual competitions between the different ambulance sections on the respective lines, together with an Inter-Railway Shield Competition; but these competitions were suspended during the war-period.

The efficiency of the railway-ambulance system in general was so well recognised by the military authorities on the outbreak of the war that a large number of those railway workers who, on joining the Colours, were found to be members of Ambulance Centres were sent direct to medical units to act, mainly, as stretcher bearers. Other members of Ambulance Centres—or, indeed, these same members on their return to railway work from active service abroad—put in regular attendances at the railway stations when ambulance trains, or, alternatively, when troop trains, were either loaded or unloaded there, doing so, as a rule, not as a matter of railway duty, but in their spare time, with a view to giving such assistance, either in handling the wounded or in rendering first aid, as the occasion might require. It became quite a common practice for clerks or others in the railway service who had spent the day at their ordinary duties to devote, not only their evenings, but a good part of the night, to stretcher-work on the station platforms, getting, it might be, not more than three or four hours' sleep before returning to their ordinary railway duties. Arrangements were often made by their superior officers to release them earlier from their office or other work when ambulance trains were expected.

It is true that, as a general rule, stretcher cases at the railway stations were dealt with either by members of local Voluntary Aid Detachments, operating in connection with the Red Cross organisation, or by members of the Royal Army Medical Corps; but at certain stations in different parts of the country the whole of the work of detraining the wounded was carried out by members of the company's Ambulance Centre.

In addition to the services thus rendered by them at the railway stations—services which were greatly appreciated by the Army medical authorities—many of the railway ambulance men devoted their off-duty hours to acting as hospital orderlies, carrying patients from one ward to another or rendering other services.

The members of the Railway Ambulance Centres undertaking one or other of these beneficent tasks belonged to all grades of railway servants and included, more especially, clerks, inspectors, engine-drivers, firemen, shunters, ticket collectors, and workers in goods yards. Nor were they

limited to men only. When women and girls were engaged in larger numbers to occupy posts vacated by men joining H.M. Forces, many of them took to ambulance work with great eagerness and soon became fully qualified to render "first aid" in case of accident. In a number of instances, also, they joined Voluntary Aid Detachments and devoted much of their spare time to nursing or other work in the hospitals.

CHAPTER XX.

BELGIAN REFUGEES.

On August 3rd, 1914, the s.s. *Princesse Henriette* arrived at Dover with twelve hundred passengers, mostly British and Americans, who were hurrying to England—together with a certain number of well-to-do Belgians—to escape the risks and dangers foreshadowed by the situation in Europe. Austria-Hungary had declared war on Serbia July 28th. Germany declared war on Russia August 1st; she invaded Luxemburg the same day; her troops entered upon French territory August 2nd, and her ultimatum to Belgium—rejected by that gallant little nation—expired at 7 p.m. (Belgian time), August 2nd, with every prospect that Germany would speedily be across the Belgian frontier, as, indeed, she was, on August 4th. So the flocking back to England of British tourists and others on August 3rd, Bank Holiday though it was, could be regarded only as a wise precaution.

Like conditions also prevailed at this time in connection with the Great Eastern services from Antwerp, the company's boats being crowded, not alone with returning tourists, but with hundreds of English children who had been at schools in Belgium.

On August 4th the passenger traffic from Ostend and Antwerp was again exceptionally heavy; though on this occasion the boats for Dover were sent on to Folkestone. Three days later the Germans occupied Liége, and from that time the influx of Belgians into England rapidly increased, the more so as the Germans continued their advance towards Brussels, spreading terror in all directions. Abandoned alike by the Belgian Government and by the Belgian General Staff—any defence of the capital against the invader being clearly hopeless—Brussels was occupied by the Germans on August 20th, and the situation of Belgium became grave indeed.

It was on or about this same date that some fishing boats and colliers arrived in Folkestone harbour loaded up in such a way as they had never been before. They were crowded with homeless people from Belgium who were still so much under the influence of panic, on account of the scenes through which they had passed, that many of them at first refused to land and could only with much difficulty be induced so to do.

When the good-hearted fisher-folk of Folkestone heard the news, they hastened to the harbour, took the refugees to their homes, gave them food and shelter as far as they could, and then, on their own means becoming exhausted, sought, and readily obtained, the aid of certain local ministers.

Within the course of the next few days Belgian refugees were pouring into Folkestone not only in their hundreds but in their thousands. The condition of most of them was pitiable. They brought with them no more than they wore upon their backs or carried in their hands. Many had been in the train a night and a day; others had been walking along the roads two or three days before they reached the Belgian coast, and all were suffering more or less from cold, hunger, exhaustion and extreme mental distress.

By August 24th a local committee had been formed at Folkestone to organise measures for relieving the refugees. On the same day a War Refugees Committee was formed in London by Lady Lugard, the Hon. Mrs. Alfred Lyttelton and Viscount Gladstone, and arrangements were made that refugees whose immediate needs had been cared for at Folkestone should be sent on to London, at the cost of the War Refugees Committee, whose representatives would meet them on their arrival in London and then take charge of them, an appeal which had been made through the Press for hospitality to be extended to the unfortunate wanderers having met with widespread response. A number of the Belgians arriving at Folkestone were well provided with funds and required only to be shown to an hotel or apartments; but the majority of them were, for the time being, wholly dependent on the sympathy of the British people.

Following on the destruction of Louvain and the bombardment of Malines, thousands of homeless people flocked into Antwerp, and, having regard to the need, for military reasons, of clearing out the bulk of the civil population from that port, there was every prospect that the refugee question in England would soon attain proportions far in excess of the powers of private organisation for dealing with it. On September 5th the Burgomaster of Malines, then in London, informed the local Government Board that 1,000 refugees from his town would arrive in London the following day, and on September 7th the military authorities of Antwerp asked if the British Government could undertake to receive a large number of refugees—then estimated at between 10,000 and 20,000—from that city.

So it was that on September 9th, 1914, the President of the Local Government Board, Mr. (now Sir) Herbert Samuel, announced in the House of Commons that the Government had decided to offer the hospitality of the nation to the persecuted people. An arrangement was made between the Local Government Board and the War Refugees Committee that the former would superintend the reception of refugees at the ports, bear the cost of their transport to London, provide for their accommodation pending their distribution to centres where hospitality was offered, and pay the cost of their transport from London to destination; while the War Refugees Committee would continue to receive the refugees on their arrival in London and allocate them to the homes throughout the United Kingdom that had been made available.

It was further arranged that from Antwerp the refugees should be brought in the boats of the Great Eastern Railway Company, though

these vessels were to come to Tilbury instead of to Parkeston Quay, the Port of Harwich, taken over by the Admiralty, being then no longer available for aliens. The first boat by this route arrived at Tilbury on September 11th, with 275 refugees. A service six times a week was continued until September 25th, when it was reduced to one of three days a week. Towards the end of September the Germans began their attack on Antwerp. The first of the forts was silenced by them on September 29th, and three days later the Belgian Government regarded the position of the city as so hopeless that they decided to leave for Ostend. They delayed the carrying out of their plans owing to the prospect of help from England; but the British Naval Brigades sent over were too late to retrieve the situation. The evacuation of Antwerp began on October 6th.

It was estimated that there were then about half a million people in the city. A large proportion of these had flocked into Antwerp for safety, just as they had previously flocked into Brussels. They were, in fact, refugees already, and they had to become refugees once more. The Government left for Ostend October 7th. The bombardment of Antwerp began the same night; but by that time practically the entire population was in flight. Great numbers went on to Ostend. Many thousands took refuge in Holland or in France. By the morning of October 8th only a few hundred people were left in Antwerp. The city surrendered the following day.

The Great Eastern service from Antwerp to Tilbury was continued till Wednesday, October 7th, from which date no more steamers left Antwerp. By this time the number of refugees who had been brought to Tilbury, thence to be taken on to London by special or ordinary trains, was just over 8,000.

Meanwhile the South Eastern and Chatham Railway Company had put on an additional steamship service between Ostend and Folkestone and the Local Government Board had sent to Ostend a representative who was to supervise the departure of refugees from that port. The first party so dispatched, about 250 in number, left on October 1st. Two others followed on October 5th and 6th. With the fall of Antwerp, and the further advance of the enemy on Ostend as his next objective, the influx there of refugees eager to cross over to England while there might still be a chance for them so to do became greater than ever. The services run by the South Eastern and Chatham boats between October 8th and 14th were as follows:—

Date.	Steamer.	Trip.
October 8th, 1914	*Invicta*	Dover–Ostend–Folkestone
,, 9th ,,	,,	Folkestone–Ostend and back
,, 10th ,,	,,	,, ,, ,,
,, 11th ,,	,,	,, ,, ,,
,, 12th ,,	,,	,, ,, ,,
,, 13th ,,	,,	,, ,, ,,
,, 14th ,,	*The Queen*	Dover–Ostend and back
,, ,, ,,	*Victoria*	,, ,, ,,
,, ,, ,,	*Invicta*	Folkestone–Ostend and back

There were thus three of the company's boats which made special runs on October 14th—the day when the enemy was expected to occupy Ostend. The situation was a particularly hazardous one. There was no direct communication with Ostend, and when the boats started from this side there was no knowing whether or not the Germans were already in possession of Ostend. The captains of the vessels were, accordingly, warned not to enter the port if they saw anything suspicious in the appearance of the place. Fortunately the Germans had not yet arrived and the boats were speedily packed with refugees, of whom there was then a multitude of something like 20,000 people awaiting deliverance. About 2,000 were taken on to each of the three boats, though others had left by other boats earlier in the day. The Germans took possession of Ostend the same night.

The refugees brought to Dover in *The Queen* and the *Victoria* on the 14th (those rescued by the *Invicta* were taken on to Folkestone) remained in those vessels alongside the Prince of Wales' Pier until the 16th, when they were dispatched by special trains to various destinations. The departures from Dover and Folkestone on the 15th were as follows :—

Name of Boat.	Conveyed (approximately).	Port.	Special Train left at	For	Conveying	
					Adults.	Children.
[1]	700	Dover	7.55 a.m.	Liverpool	500	and
		do.	8.45 a.m.	Manchester	200	and
St. Petersburg	2,000 [2]	Dover	7.41 p.m.	London (Holborn)	587	and
		do.	11.42 p.m.	Glasgow	365	120
		Folkestone	4.5 p.m.	Alexandra Palace	359	137
Kenilworth .	2,000	do.	4.50 p.m.	do.	409	166
Henriette . .	500	do.	5.50 p.m.	Kensington (Addison Rd.)	525	268
		do.	7.16 p.m.	do.	363	145
Total . .	5,200 [2]	—	Eight Special Trains	—	3,308	836
					4,144	

The arrangement under which special trains of refugees were run

[1] No record of name of boat.
[2] Balance dispatched from Dover to Glasgow in the early hours of October 16th.

direct from Dover to Liverpool, Manchester and Glasgow was due to the fact that by this time the pressure on the space available in the various institutions, etc., allotted to the accommodation of refugees in London was exceptionally great, so that offers made by the towns in question to provide for large parties which could be sent straight on without passing first through London were a welcome relief to an embarrassing situation.

October, 1914, was the month during which the flight of refugees to England attained a maximum. Between October 6th and 26th, the number of adults and children conveyed by special trains from Folkestone and Dover was no fewer than 24,756. Their destinations were London (Holborn, London Bridge, or Addison Road stations), Alexandra Palace, Liverpool, Manchester and Glasgow. Between October 10th and 17th the arrivals of refugees (exclusive of about 5,000 wounded Belgian soldiers) at Dover attained a total of, approximately, 13,000. Not only were the *Invicta* and *The Queen* packed to their utmost capacity, but hundreds of men, women and children unable to find room in the overcrowded steamers came across in fishing smacks or any other vessels that might be available, landing at Dover, the Thames, Lowestoft, Southampton or elsewhere. On October 16th the arrivals in London attained the record number of 4,161.

From August, 1914, to May, 1915, the South Eastern and Chatham Railway Company conveyed 61,113 refugee adults and children viâ Folkestone, Dover or Gravesend to London or elsewhere on Local Government vouchers by special or ordinary trains. Allowance must be made, also, for those refugees who paid their own fares. Here there is no definite record available; but the number of passengers who purchased ordinary *single* tickets between Belgium and London from August 5th to October 31st, 1914, was 14,658, and one may assume that these persons would be mainly, if not almost exclusively refugees. Adding these two figures together, we get a total of 75,771 refugees who travelled by the South Eastern and Chatham system either to London or to other destinations in the United Kingdom.

The following further figures may be of interest as showing the proportions in which the refugees were conveyed from Dover and Folkestone in special trains and ordinary trains respectively:—

Period.	Trains.	Refugees.
September 22nd, 1914, to December 29th, 1914	Special	20,923
September 28th, 1914, to March 22nd, 1915	Ordinary	26,181
	Total	47,104

The arrival at Dover of so many people from invaded Belgium gave rise to some degree of concern to the military authorities, who had taken over the control of that port for the purposes of the war. This feeling of concern may have been all the greater since there were reasons for believing that among the arrivals there were—or might be—a number

of German spies, posing as refugees. Popular rumour even spoke of twenty such persons having been arrested, included therein being one who was said to have been attired in Belgian Red Cross uniform. Whatever the truth of the story, certain it is that a military order was given for the exclusion of foreigners from Dover. All, with one or two exceptions, had left the town by November 14th.

The refugee traffic formerly dealt with at Dover was thus diverted to Folkestone, which then became the principal port for that traffic. In the week following the fall of Ostend the number of refugees received at Folkestone was 26,000. Between September 20th and October 24th the figure amounted to 35,000. On October 26th there were also landed at Folkestone about 2,000 refugees from the North of France who had been rescued by the South Eastern and Chatham Company's s.s. *The Queen* from the French transport, *Amiral Ganteaume*, which had been torpedoed on her way from Calais westward. Taken on first from Folkestone to London, where they were accommodated in the Alexandra Palace, these French refugees were afterwards provided for by the French Government on the west coast of France.

The sum total of refugees passing through Folkestone during the war-period was 120,000.

With the cessation of transport facilities, first from Antwerp and then from Ostend, the only routes available for the bulk of the remaining Belgian or other refugees who were desirous of coming to this country were those viâ Holland or Calais.

Subject to only comparatively few interruptions, the Great Eastern Railway Company's services with Holland were continued throughout the war; though the terminal points varied from time to time according to circumstances. The port of departure on the other side for those services might be either the Hook of Holland or Rotterdam, and the port of arrival on this side either Parkeston or Tilbury. In addition to much Government traffic, mail traffic and transport of food supplies, the Great Eastern steamships brought across from Holland throughout practically the entire war-period a fairly constant stream of Belgian and other refugees; but the whole of these were landed at Tilbury, none of them being permitted to pass through the port of Harwich. It was when bringing a number of such refugees from Rotterdam in the s.s. *Brussels* that Captain Fryatt was captured by the Germans in June, 1916.

Definite figures as to the number of Belgian refugees, as distinct from other refugees and other passengers, brought from Holland to England by the Great Eastern steamers are not available; but there is no doubt that they formed a good proportion of the 7,447 passengers conveyed thereon between the outbreak of war and December 31st, 1914, as well as of the 17,168 passengers brought by the same steamships from Holland to Tilbury between January 1st, 1915, and the signing of the Armistice; though the last-mentioned figure also included Belgian workmen engaged for the manufacture of munitions in this country,

the wives and families of refugees and workers already here, and men of H.M. Forces who, interned in Holland, had been allowed to come home on leave.

Still other refugees came on other vessels, and more especially on those of a service between Flushing and Tilbury started by the Zeeland Steamship Company (of Holland) on December 6th, 1914.

In regard to the transport arrangements during the period from the outbreak of war to December 31st, 1914, the "Report of the Special Work of the Local Government Board Arising out of the War" [Cd. 7763] says:—

> The arrangements for the transport of the refugees have been much facilitated by the extreme efficiency and goodwill displayed by the Railway Executive Committee and by the officials of the various railway companies. Particular mention may be made of Mr. F. H. Dent and Mr. Hayne, of the South Eastern and Chatham Railway Company, and of Mr. Hyde, Mr. Busk and Mr. Barker, of the Great Eastern Railway Company, with whom the department has been brought into very frequent contact. No difficulties have been raised and everything has been done with the utmost readiness and cheerfulness. Mr. Campbell, who is in charge of the Transport Department of the War Refugees Committee, has also rendered invaluable service.

The influx of refugees into this country attained its maximum at the end of March, 1915. From that time there was a steady increase in the outward movement, accounted for by the recruiting of men of military age for the Belgian Army or by the migration of workers taking up employment in France. The maximum number of refugees in the United Kingdom at any one time was about 210,000. The number registered under the compulsory registration scheme adopted in October, 1914, was 240,000, exclusive of about 19,000 wounded Belgian soldiers (who counted, officially, as refugees)—a total of, approximately, 260,000.

Distribution.

For the purpose of organising the hospitality which, as the President of the Local Government Board had announced, the nation was prepared to offer to the refugees, some 2,500 local committees were formed in England, Wales and the Channel Isles as the result of an appeal made by the said department, though there were certain "prohibited areas" to which refugees were not to be admitted without special permission. In Scotland the Lord Provost and Magistrates of Glasgow undertook to receive and provide for a large number, and that city became the headquarters of the hospitality movement in Scotland generally. The total number sent to Scotland during the war period was over 18,000. Many also went to Ireland.

In November, 1916, the distribution of refugees throughout the United Kingdom was approximately as follows:—Metropolitan Police Area, 65,500; Scotland, 10,000; Yorkshire, 10,000 (including Sheffield, 1,900; Leeds, 1,500; Bradford, 600, and York and Huddersfield, 350

each); Lancashire, 10,000 (including Manchester and Salford, 2,400; Blackpool, 1,300; Liverpool, 1,000, and Barrow, 450); Kent, 6,500 (of whom 400 were in Folkestone, many remaining there in residence until the end of the war); Warwickshire, 6,000 (including Birmingham, 3,800, and Coventry, 900); Wales, 4,500 (including Pembrokeshire, 1,000; Swansea, 500, and Cardiff, 450); Hertfordshire, 4,000; Devonshire, 3,200; Durham, 2,700; Surrey (extra-Metropolitan), 2,700; Gloucestershire, 2,600 (of whom 500 were in Bristol); Sussex, 2,100; Cheshire, 2,000; Cumberland, 1,800; Somersetshire, 1,800; Derbyshire, 1,800 (of whom 500 were in Derby); Ireland, 1,650; Nottinghamshire, 1,600 (of whom 600 were in Nottingham), and Hampshire, 1,500.

These figures were subject to later changes, as, for example, in the case of Birmingham, where the number under the care of the local committee was at one time between 4,000 and 5,000. They will serve, however, to suggest how great an amount of railway travelling must have been involved in the distribution of the refugees throughout the country, swelling proportionately the sum total of the transport demands that were being made on the railways. Nor do the figures given suffice in themselves to indicate the actual amount of the railway transport involved. Refugees were not simply taken to an original destination and left there until the time came for their being sent back to Belgium. There was much additional travelling on account of their transfer to places offering a better chance of employment; changes of residence on account of health or for the attendance of children at school; visits to relatives and friends in other towns or districts, and so on. In regard to employment, many of the refugees left the homes allotted to them in the first instance for Erith or Barrow, where remunerative work was awaiting them, or they went on to localities where Belgian munition-works had been set up. Two of these works, situate at Twickenham and Letchworth respectively, were, before the end of 1916, employing Belgian refugees to the extent of 3,000 men and 675 women. Employment was also found for considerable numbers of refugees at the National Projectile Factory at Birtley. From Scotland and Ireland there was a steady migration of refugees back to England.

Rail Travel Vouchers.

Rail transport was provided for by means of vouchers issued free of cost to the refugees, and assuming two forms—Voucher A, for parties of refugees taken from the port to some centre (*e.g.*, London) for distribution, and Voucher B, for subsequent journeys to places of allocation, or otherwise.

In the first instance Voucher A was issued by the War Refugees Committee. It was adopted by the Local Government Board when that body agreed to bear all costs of transport, and it then underwent the necessary modification, reading as follows:—

A. LOCAL GOVERNMENT BOARD,
WHITEHALL, S.W.
.....191 .

.....Railway,
.....

*Please supply bearer.....with.....3rd class tickets from.....to.....
for.....Adults and.....Children, and send Account to this Office for Payment.

For THE LOCAL GOVERNMENT BOARD,
†*Signed*.....

* The Escort should whenever possible present this Voucher himself to the Booking Office.
† Any alteration to this Voucher must be initialled by the person signing it.

Voucher B was drawn up thus, as the result of consultations between representatives of the Local Government Board, the Railway Executive Committee and the War Refugees' Committee :—

B. No.
TRANSPORT DEPARTMENT.
War Refugees' Committee,
General Buildings,
Aldwych, W.C.
.....191 .

..... Railway.
.....

Issued 3rd Class Railway Tickets for
*Adults.....
*Children.....
From .....
To .....
.....

Signature of Booking Clerk.

To be forwarded to above address.

* Numbers to be written in words.

No.
Local Government Board,
Whitehall, London, S.W.
.....191 .

..... Railway.
.....

Please issue 3rd Class Railway Tickets for—
*Adults.....
*Children.....
From .....
To .....
and forward account to above address for payment. (This voucher to be attached to Railway Account).

..... (*Sd.*) H. C. MONRO,
Signature of Issuing Officer. Secretary Local Government Board.

N.B.—This voucher is only to be used for transport of destitute War Refugees travelling to authorised place of allocation.

* Numbers to be written in words.

The second form of voucher, the issue of which was centralised in the Transport Department of the War Refugees' Committee in London, covered all the railway journeys of the refugees when they moved from one place to another on account of changes in employment, considerations of health, education of children, and so on, in any part of the United Kingdom, except in the comparatively infrequent instances when they paid their own fares. All applications for Voucher B had to be supported by the local committee, and shown to be made for sufficiently good reason, before they were conceded by the Central Authority in London.

On the increase of 50 per cent. being made in the fares of ordinary railway passengers early in 1917, the Local Government Board, with a

view to assisting the railway companies in dealing with the transport problem, impressed upon the local committees the expediency of their restricting the rail journeys of refugees as much as possible, a circular being issued in which it was said :—

> The object of these measures is to economise railway plant and labour with a view to the successful prosecution of the war ; and in order to assist the Railway Executive in reducing traffic, local Refugee Committees are especially asked to advise all refugees to abstain from unnecessary travelling. Applications for free travelling facilities made to the War Refugees Committee at Aldwych will only be considered under very special circumstances.

From March 1st, 1918, the new Government Department Ticket was substituted for the Local Government Board vouchers on which destitute war refugees had hitherto travelled. Concurrently therewith, direct payments by the Local Government Board to the controlled railway companies ceased, the cost of journeys by those refugees being now added by the companies to their working expenses, to be made good under the Government guarantee.

The "Report on the Work undertaken by the British Government in the Reception and Care of Belgian Refugees" (1920) includes a statement of the expenditure incurred, and among the items there is one of £370,861 in respect to "Expenses of transport." An explanatory footnote says :—

> This includes actual payments made to railway companies for transport up to February, 1918. From that date cash payments ceased. According to returns made to the Treasury by the Railway Clearing House the estimated "value of travel" for the nine months ended December 31st, 1918, in respect to vouchers issued by the Board for railway journeys by Belgian refugees was £38,423. Some £800 of this was in respect of railway journeys to ports on repatriation.

Other War Refugees.

It should be added that the organisation set up by the Local Government Board dealt, not alone with Belgian refugees, but with, also, soldiers and refugees—including men, women and children—of various allied nationalities, included therein being French, Alsatians, Italians, Russians, Serbians, Poles (recruits for the Polish Legion serving with the French Army), Montenegrins, Roumanians and Albanians landed in this country from Holland, Russia and Scandinavia. In 1916 the Local Government Board dealt with a considerable number of Russian soldiers who, captured by the enemy and taken to Germany, had escaped from that country into Holland. After the overthrow of the monarchy in Russia, in 1917, large parties of Russians and others landed in this country, and comprising, on one occasion, 1,000 persons, were brought to London by special trains to be located in the Refugees' Camp at Earl's Court. In order to guard against the possible spread of contagious diseases, a health-clearing station for refugees was set up in the Isolation Hospital at Joyce Green, Kent, capable of providing for 887 adults and 251 children. In June, 1918, special trains were run from Newcastle-on-Tyne to Dartford for the conveyance to the said health-clearing

station of all the refugees or soldiers from Northern Europe landed at the north-eastern port from a vessel on which infectious diseases had occurred. Similar precautions were also taken at Invergordon in respect to arrivals there of Russians and others from Murmansk. Subsequently a large building was taken over at Newcastle-on-Tyne and converted into an isolation camp, the running of further special trains from that port to Kent thus being avoided.

Belgian Recruits.

The refugees flocking to this country from Belgium included a considerable number of men of military age, and early steps were taken with a view to securing their enlistment in the Belgian Army.

In the first instance an appeal was made by the Belgian Government to all unmarried Belgians between eighteen and thirty years of age to join up for the period of the war, and measures were taken to trace all male Belgians of military age who were then in, or might still come to, the United Kingdom. On March 1st, 1915, there was issued a Belgian military decree which required all Belgians between the ages of eighteen and twenty-five to enrol themselves and appear before a Belgian Recruiting Committee for enlistment or exemption. Finally, on July 21st, 1916, a further decree by the Belgian Government called up for military or other public service all male Belgians between the ages of eighteen and forty.

In support of this policy there had been organised in London a Belgian Military Committee which had for its mission that of sending back to active service Belgian soldiers who had joined in the flight of the refugees, and free transport from London to Folkestone had been conceded to all such soldiers as the Military Committee might be able to trace. By about the middle of November, 1914, however, it was found that many Belgian soldiers and, also, many Belgians of military age who were willing to join the Belgian army were scattered throughout the United Kingdom without having the means of coming to London either to join up or to present themselves before the Belgian Military Commission for enlistment, and the Military Committee asked that free transport should be granted to such men from the places where they then were to London or Folkestone, with return free passes back to the said places in the case of those who might not be found suitable for military service.

The Local Government Board agreed that the vouchers issued by them for the transport of the refugees should be available for such journeys as those stated.

This arrangement continued in force under the operation of the Belgian Military Decrees of 1915 and 1916, and a large number of Belgian recruits were so conveyed by rail.

British Railways and Belgian Railwaymen.

Among those who took part in the flight from Belgium which followed more especially the German advance on Antwerp and then on

Ostend was almost the entire body of Belgian railwaymen. A large proportion of them went to Holland and others crossed the frontier into France; but many were included among the refugees who had come to England. For the time being, however, the identity of those who landed on these shores was lost among the crowd of wanderers. Scattered to the four winds, they were known as railwaymen no longer.

Yet the time would surely come, sooner or later—and no one could then say how long the war would last—when those railwaymen would be wanted back in their own country to work the railways once more; and it was a matter of military as well as of economic importance that their services should be readily available whenever the need for them arose, either during the course of the war or afterwards.

Inspired, doubtless, by such views as these, the British War Office suggested to the Railway Executive Committee, at the time the Ostend contingent of the refugee legion was being distributed throughout the United Kingdom, that steps should be taken by the railway interests here to keep in touch with those of the homeless ones who were in the employment of the Belgian State Railways. Concurrently with this suggestion came one, also, that the British railway companies should extend their own hospitality to these Belgian railwaymen in the trouble which had come upon them. Both proposals were approved by the Railway Executive at a meeting of that body held on October 20th, 1914, and a Belgian Railways Refugee Sub-Committee was appointed forthwith to take such steps as might be necessary.

As originally constituted, the sub-committee consisted of the following: Mr. (afterwards Sir Francis H.) Dent, General Manager of the South Eastern and Chatham Railway (Chairman); Mr. (afterwards Sir Henry W.) Thornton, General Manager of the Great Eastern Railway; Sir Sam Fay, General Manager of the Great Central Railway; Mr. Arthur Watson, then Superintendent of the Line, afterwards General Manager, Lancashire and Yorkshire Railway; Mr. G. H. Beaumont, Great Eastern Railway; Mr. A. J. Wyley, Lancashire and Yorkshire Railway; Mr. W. L. Cooper, Great Northern Railway; Major Leggett, R.E., representing the War Refugees Committee, Mr. P. Defrance, representing the Belgian State Railways, with Mr. E. C. Blanchard, South Eastern and Chatham Railway, as secretary. Subsequently, at the request of the Belgian Minister of Railways, four of his chief officials were appointed members of the sub-committee. In January, 1915, Sir Sam Fay resigned and was replaced by Sir William Forbes, General Manager of the London, Brighton and South Coast Railway.

On behalf of the Lancashire and Yorkshire Railway Company, Mr. Watson placed four rooms at the disposal of the sub-committee in the company's offices at 10, Great College Street, Westminster. To carry out the clerical work, the General Manager of the Great Eastern Railway lent the services of three Belgian clerks belonging to the company's Antwerp Agency, as well as a shorthand writer and typist from the Continental Traffic Manager's Department at Liverpool Street Station.

Sir Sam Fay also lent the services of a clerk of the Great Central Railway's Antwerp Agency.

Starting work on October 24th, 1914, the sub-committee set before themselves the task of first tracing the Belgian railwaymen already in this country, then of assisting them to find employment, and, after conveying them to where this employment was to be found, obtaining hospitality for them and their families. The realisation of this combined aim was far from easy of accomplishment. Taken to the Alexandra Palace on their arrival in London, the railwaymen had, in common with the other refugees, been allocated where suitable hospitality was available, so that while some found themselves in seaside resorts or country villages where no railway work could be provided for them, others were traced as far away as Tipperary or the North of Scotland.

As a means of overcoming this difficulty, there was opened at Alexandra Palace an office where Mr. W. L. Cooper, assisted by two Belgian railway officials, received the railwaymen among the refugees as they arrived, saw to their wants, and secured their allocation to localities as near as possible to places where there would be a chance of their obtaining employment. On the closing of the Alexandra Palace the office was transferred to the Earl's Court War Refugees' Camp.

Meanwhile the railway companies had been giving expression to their wish themselves to offer hospitality to some of the men and their families. Several of them lent or hired flats or houses which they furnished and placed at the disposal of the men at a nominal rental of from two shillings to five shillings a week, while the Great Eastern and the South Eastern and Chatham Companies accommodated forty-three families of Belgian railway officials in their Liverpool Street, Cannon Street, Charing Cross and Craven Hotels for periods ranging from a few days to four years.

Work as fitters, platelayers and loaders was found by the railway companies for about 750 of the men. More would have been done in this direction but for the fact that the refugees could not enter certain areas prohibited to aliens where they might otherwise have got employment.

Much greater trouble, however, was experienced in finding work for those who, belonging to the higher grades of the Belgian railway service, were not suited to manual labour. Departmental managers, stationmasters, inspectors and a large number of clerks who had taken part in the flight to England, and now counted no less as refugees, could not themselves become fitters, platelayers or loaders, nor, with their lack of knowledge, or their inadequate knowledge, of English could they take up railway work here corresponding to that which they had done in their own country. Neither could the British companies engage Belgian engine-drivers to take charge of trains here. Fortunately many of those whom it was not possible to assist in these directions solved the difficulty for themselves by getting employment in munition factories where they were able to earn up to £11 a week.

While doing all they could to promote the personal interests of the refugees, the sub-committee were not unmindful of the further purpose in view on their appointment. They started almost at once on the compilation of a complete list of employés of the Belgian State Railways then in, or likely still to come to, the United Kingdom. It was compiled in part through the insertion in the newspapers of advertisements in English, French and Flemish, asking Belgian railwaymen in the United Kingdom to communicate with the Railway Executive Committee, giving their names, grades and addresses.

In November, 1914, some 3,000 Belgian refugee railwaymen were reported to be still in Flushing, and it was thought desirable that they should join their confrères in England. The War Office, with the concurrence of the Foreign Office and the Local Government Board, agreed to this being done, and it was arranged that the State Railway officers among the number should be brought viâ Folkestone, while the Zeeland Steamship Company's boats should be utilised for the transport of the lower grades from Flushing to Tilbury. These proposals had, however, to be dropped, and any of the railwaymen in question who found their way here were brought over by the Local Government Board as ordinary refugees. The great proportion of the 3,000 preferred to remain in Holland with their families rather than come to England, their decision being influenced by dread of a North Sea crossing, by their ignorance of English, and, also, by a desire to remain as near to Belgium as possible in order that they could return there at the first opportunity. Encouraged by promises made to them by the Germans, many of them did so return; but the invaders failed to keep their promises and the unfortunate railwaymen had reason bitterly to regret the confidence they had reposed in their country's oppressors.

As time went on employment for a number of the refugee railwaymen in England was secured for them in some large railway works at Oissel, near Rouen, and, as a rule, those who thus left for France took their families with them. Others joined the Belgian Army Railway Transport, their families remaining here; though in all cases where this was done, the British railway companies granted the men a free pass every six months in order that they might visit their families. There was still another movement of Belgian railwaymen, namely, from Holland to France, viâ London; and here, again, the railway companies assisted, giving the men free conveyance, first from Rotterdam to London, and then from London to Havre.

Much of the time of the secretary of the sub-committee and his staff, upon whose energies great demands were made, was taken up in dealing with personal aspects of the work. In the early days many inquiries for news of lost relatives were received, and to these it was often possible to give immediate satisfactory replies and so bring dear ones together again. In one instance there were received by the same post two letters, one from two wives, allocated to a London hostel, and the other from their two husbands, who were at St. Annes-on-Sea,

Lancashire, each pair of writers asking for news of the others. Another case was that of a railway official from Louvain who arrived at Earl's Court Camp in November, 1914. He had been without news of his wife and family since they left home in August. By a lucky chance it was possible to trace the family to La Panne, in the small part of Belgium not occupied by the enemy, and the journey there of the inquirer, so that he could rejoin his family, was facilitated.

The gratitude expressed in many of the letters received from individuals aided was regarded as an ample reward for all the trouble taken.

The number of Belgian railwaymen dealt with by the sub-committee was 3,618, namely, 2,801 who were living as refugees in Great Britain and Ireland and 817 who passed through England on their way from Holland to France. Of those living in the United Kingdom, 1,755 found employment here. The remainder either could not work, owing to age, sickness, etc., or else went on to France, where their knowledge of the language enabled them to obtain employment from the French Railway Administrations.

In addition to the men directly assisted, help was rendered to the wives and families of 354 railwaymen who had either remained in Belgium or were serving as soldiers in the Belgian Army.

During the course of their operations the sub-committee made 397 applications for clothing, for 1,346 people, to the Clothing Depôt of the War Refugees Committee, and these, together with other applications to that committee for hospitality, private relief, medical attendance, etc., were always generously met. Willing assistance was also given by local War Refugee Committees, the Local Government Board, the Metropolitan Asylums Board, private firms and the public generally.

The sub-committee continued its operations until February 22nd, 1919, when, the arrangements for repatriating the Belgian refugees having been completed, there was no longer any need for its activities.

Repatriation.

While the country had welcomed the coming, it had nevertheless to be prepared to speed the parting, guest whenever circumstances would permit of the Belgians returning to their own country. Any undue prolongation of their stay here, in appreciable numbers, beyond the strictly necessary period, would, among other things, have involved complications in the labour world which it was most desirable to avoid ; though, on the other hand, the situation was one that called for delicate handling since there could be no suggestion of making the nation's guests leave the country against their will.

The matter was first considered by the Local Government Board in August, 1916 ; but the psychological moment for bringing it forward in definite form naturally did not occur until the signing of the Armistice. The Local Government Board then informed the Belgian authorities that the British Government were willing to defray the cost of repat-

riating all those either of the indigent or of the working-class refugees who were prepared to avail themselves of this offer by a certain date. From and after that date any who wished to return to Belgium would be left to do so at their own expense, save as regarded cases in which the delay had been due to illness or other exceptional cause. Those accepting the Government offer would return in batches, aggregating about 10,000 a week, and it was suggested that they should, in the first instance, go to receiving-homes in Belgium where they could be sorted out according to their occupations and final destinations. The gathering of them together on this side, their dispatch by train and boat, and various other necessary arrangements, would be undertaken by police authorities, local committees or individual workers. Each refugee would be allowed 300 lbs. of luggage free, and each should be furnished with an "authorisation card" which would serve the combined purposes of an identification-card, a passport and a through ticket, by rail and boat, from point of departure to destination.

These proposals were approved by the Belgian Government, and immediate steps were taken to carry them into effect. Detailed instructions, in French and Flemish, were drawn up and circulated, so that the refugees would know exactly what they had to do; the railway companies undertook to run special trains from leading centres for the conveyance of the refugees to the ports of embarkation, and the Ministry of Shipping agreed to place the necessary vessels at the disposal of the Local Government Board for the transport of parties averaging about 1,000 each. It was anticipated that the number of refugees who would come under the operation of the scheme was about 110,000.

A start with the Government-assisted repatriation was made on December 14th, 1918, and by the end of that year the number repatriated had been 5,500, these being drawn mainly from districts of England or Scotland where, owing to the cessation in the manufacture of munitions, difficulties in regard to employment would be most likely to arise. The official programme remained in operation until May 6th, 1919.

The principal ports for the embarkation of the refugees were Hull and Tilbury, and, by the last-mentioned date, 61,196 had crossed by these or other routes to Antwerp. Another 5,574 were taken from Dover to Ostend in some Russian vessels placed at the disposal of the Local Government Board, while between January 17th and May 5th, 1919, there were conveyed from Dover to Ostend by the ordinary mail service 23,776 Belgians, of whom 20,845 travelled at their own expense, the fares of the remainder being paid by the Local Government Board. That department also paid the fares, by the Dover-Ostend mail boats, of those refugees who, on account of illness or for other adequate reasons, had been unable to return to Belgium in the vessels provided by the Ministry of Shipping during the time the scheme was in force. It was estimated that there were still about 20,000 Belgians in the United Kingdom in May, 1919, but many of these left subsequently, travelling at their own cost.

The movement of so large a number of refugees at the rate of several thousands per week naturally involved the running of many special trains by the railway companies, and this, too, at a time when traffic difficulties were still acute. Much trouble was occasioned, also, by the conveyance of the luggage by which the returning wanderers were accompanied. The 300 lbs. of free luggage was already a generous allowance. It even included, as "personal baggage," bedding and bedsteads, "if properly packed"; though it was announced that "heavy and more bulky furniture" could not be taken at the expense of the British Government. In practice, however, the amount of luggage taken per passenger was anything up to 500 lbs. or 600 lbs., and it became a matter of frequent occurrence for a special train of refugees to have to convey, also, from 60 to 100 tons of luggage. In the case of large parties it was often necessary to provide three or four additional trucks, for the same reason.

Every indulgence was shown, and all possible care was taken, by the railway officials and others concerned in the traffic arrangements; but the carelessness of the refugees themselves in regard to their luggage was incredible. They left it on the platforms or in the cloakrooms, assuming, apparently, that it would be sure to follow them, or, conscious of the fact that they were exceeding their allowance, they wrote on their address some other name than their own, and were much distressed to find that things went astray. At London stations alone over 300 tons of lost luggage belonging to Belgian refugees were collected, though most of what was left behind eventually reached the lawful owners.

Under the heading "Railways," Mr. Campbell says in his "Transport Department Report on the Repatriation of the Belgian Refugees," published in the "Report on the Work undertaken by the British Government in the Reception and Care of the Belgian Refugees":—

> The war having reduced the rolling stock, and coal being scarce, it would not have been possible to carry out the shipping programme were it not for the special facilities made by the Railway Executive Committee.
>
> As several ports were worked at a time and many special trains were required, great credit is due to their office for carrying out the details that were necessary. In addition to this, the whole of the railway system throughout the United Kingdom seemed to know that we required their assistance, and added to the success of the undertaking by their willingness to arrange special trains at very short notice.

CHAPTER XXI.

BELGIAN SOLDIERS ON LEAVE.

Towards the end of 1914 and throughout the year 1915 there was a steady flow to this country of Belgian soldiers to whom leave had been granted in order that they might either make inquiries in England concerning missing relatives or friends or else visit their families who were living here and whom—more especially with the help of the Central Register which had been set up—they had succeeded in tracing. In March, 1915, it was agreed with the War Office that the arrangement under which British soldiers on leave and travelling in uniform could obtain a return railway ticket at a single fare should be extended to French and Belgian soldiers travelling on leave. A like privilege was afterwards granted to Belgian Red Cross nurses on leave.

Having regard, however, to the increasing transport demands on the decreasing shipping facilities, there came a time, in the winter of 1915, when doubts arose as to whether permission to Belgian soldiers in France to spend their leave in this country could be continued much longer. Such a contingency seemed likely to cause much distress alike to the Belgian soldiers themselves and to their families, relatives or friends on this side of the Channel, and Sir Francis Dent was asked if the South Eastern and Chatham Railway could do anything to avoid so undesirable a situation. Thereupon the Managing Committee adapted two small cargo boats for passenger service; the Admiralty agreed to the berthing of the vessels in Folkestone Harbour, and the Local Government Board undertook to meet the cost of transporting Belgian soldiers to a number not exceeding 300 daily in each direction between France and their destination in this country, though it was understood that no individual among them was to travel under these conditions oftener than once in four months. This new service came into operation February 12th, 1916.

In the first instance all the Belgian soldiers on leave who came to England under the arrangements in question travelled viâ Calais, or Boulogne, and Folkestone; but subsequently it was decided that fifty of the 300 per diem in each direction should travel viâ Cherbourg, or Havre, and Southampton, the remainder still coming by way of Folkestone.

Precautions had naturally to be adopted to ensure that only properly-authorised individuals could avail themselves of these privileges, and that they would be well looked after when they came.

To this end there was devised, in the first instance, a " Titre de Congé," or furlough-pass, which, printed in English, French and Flemish, bore the thumb-mark of the owner as a means of establishing his identity, and entitled him alike to free transport across the Channel and to an individual soldier's return ticket for his rail travel in this country.

After a time it was found that spurious Titres de Congé were being printed overseas and made use of, and also, that many of the Belgian soldiers coming to this country on leave were remaining here instead of returning to their duties at the Front. It thus became necessary to arrange an effective organisation designed to meet these conditions.

There was accordingly set up in London by the British authorities, for the purposes of this organisation, a Bureau Militaire de Congé designed to act in close co-operation with the War Refugees Transport Department, which was appointed by the Home Office the sole authority for the work in question. Thenceforward the Titre de Congé—printed in England—was issued to the Belgian soldier at the Front in response only to a form of invitation given by the soldier's wife, family, relatives and friends on this side, while such form was, also, to bear the endorsed consent of the local Chief of Police in the provincial town or district it was desired that the soldier should visit, or of the Transport Department when the visit was to be paid to London. The invitation form was first sent to the Bureau Militaire. It was then checked by the Transport Department to ensure that the soldier in question had not already been here within the previous four months. This fact verified, the Titre de Congé was then filled in, partly by the Transport Department and partly by the Belgian Military authorities in London, and forwarded to the soldier's commanding officer at the front. The one document was to serve the dual purpose of furlough and passport, meeting both military and (subject to compliance with regulations imposed by the Aliens Restrictions Order) civilian requirements.

Furlough-passes for soldiers travelling to London and the provinces preceded the party and were handed to the men in London when the formalities of registration, etc., had been completed. Soldiers remaining in Folkestone or in local districts were dealt with at the port of disembarkation.

When the Belgian soldiers on leave came viâ Folkestone and joined the ordinary leave trains, they were met on arrival at Victoria by Belgian gendarmes (placed on duty there for the express purpose of giving them guidance and direction), and were taken to a room in the station which the South Eastern and Chatham Managing Committee had put at the disposal of the Transport Department. If the soldiers came to Charing Cross by ordinary train from Folkestone, or to Waterloo from Southampton, they were met by non-commissioned officers of the Belgian Army who accompanied them to the headquarters of the Transport Department in Aldwych, Strand, W.C. In either case the necessary formalities were gone through and the Titres de Congé were handed to the men, each of whom also received instructions, printed in French and Flemish,

setting out the time his train would leave London and the time he would arrive at his destination, and giving him explicit directions in regard to his return journey. In case of need he was provided with board and lodging in London. Escorted by official guides to Euston, Paddington, or to any other of the railway termini, he received a return ticket in exchange for the voucher which had already been given to him by the Transport Department, and was then seen off by train.

On arriving at his destination, the soldier had to report his arrival and departure to the local police, in compliance with the Aliens Restriction Order.

Meanwhile the Transport Superintendent would have sent to the Chief Constable or the Superintendent of Police for the district to which each of the soldiers was going a notification of the man's journey, the effect thereof being to check any irregularity, and, incidentally, to ensure that the soldier did not overstay his leave. There was, in fact, an immediate substantial decrease in the number of desertions which had occurred when these regulations were not in force.

The various forms and documents—reproduced from Mr. Campbell's book on "Belgian Soldiers at Home in the United Kingdom," by courtesy of the publishers, Messrs. Saunders and Cullingham, Ltd., Burgon Street, Carter Lane, E.C.—will be found on pp. 249–252.

By way of giving some idea of the amount of work in which his department was involved in connection with Belgian soldiers on leave (in addition to all that was being done in regard to Belgian and other war-refugees), Mr. Campbell mentions that 129,000 Titres de Congé had been prepared, registered and dispatched down to August 30th, 1917; that 64,251 letters were received and answered in 1916, and that the number of letters dealt with during eight months in 1917 was 65,000.

Mr. Campbell's book does not, however, deal with matters later than December, 1917, and the eventual proportions of the traffic will be judged of better from the following figures, which give the total number of Belgian soldiers on leave who passed through Folkestone between March, 1915, and February, 1919:—

Year.	Inwards.	Outwards.	Total.
1915 (March to Dec.)	522	2,268	2,790
1916	49,889	45,526	95,415
1917	77,582	69,497	147,079
1918	41,850	45,192	87,042
1919 (Jan. and Feb.)	959	3,105	4,064
Totals	170,802	165,588	336,390

Active measures were taken alike at the ports, in London and in provincial centres to provide hospitality for the men by means of hostels, special clubs, or otherwise. In regard to what was done at Southampton, where the need arose for providing, not alone for Belgian soldiers on leave,

but, also, for Belgian recruits who might have to spend a night there *en route* for France, Mr. Campbell says :—

> The officers and servants of the railway companies throughout the United Kingdom are well known to our Belgian guests for their kindness and assistance to them when travelling, and in the case of Southampton they have been especially considerate in solving a difficult problem, namely, how to house the Belgian soldiers and recruits when interruption of traffic holds up their departure. Obviously it would have been imprudent to allow these men to roam at will without means of obtaining food and lodging. The London and South Western Railway Company lent free of charge a large room, close to the landing stage, capable of housing 100 to 200 men, and added thereto free fuel and light. The Committee of the British Club for Belgian soldiers, with local assistance and, also, aided by the Local Government Board, fitted up the building so as to enable the men to sleep there and hot meals to be served as desired.

The large room in question was part of the upper story of No. 1 shed. It was first made available in December, 1914, and it continued in use until January, 1919. In 1915 there passed through the port of Southampton about 10,000 Belgians, mostly refugees. In 1916, 1917 and 1918 the daily average of Belgian soldiers or recruits was about 50, giving a total of over 18,000 per annum ; but there were occasions when, owing to shipping difficulties, the number of Belgians housed in the South Western dormitory for the night was about 200.

Under the arrangement made by the Local Government Board in February, 1916, that department paid to the railway companies a single fare for each return ticket issued by them to a Belgian soldier, on leave, in exchange for the special voucher. From January 1st, 1917, when the increase of 50 per cent. in ordinary railway fares came into operation, the tickets issued to Belgian soldiers on leave were still paid by the Local Government Board on the 1916 basis, that is to say, without the 50 per cent. addition ; and from April 17th, 1918, no further charges on account of Belgian soldiers or nurses on leave were collected from the Local Government Board by the railway companies, who thenceforward included among their working expenses the estimated " value of travel " on the said account.

ARMEE BELGE. BUREAU MILITAIRE DES CONGÉS.

En réponse à votre lettre reçue ce jour, je vous prie de remplir la formule ci-dessous, de la faire viser par le Chef de la Police Locale et de la renvoyer au →

Bureau Militaire des Conges General Buildings, (Aldwych) LONDON

In reply to your letter received to-day, please fill in the form below, and after having it signed by the Chief of the Local Police kindly return it to →

In antwoord op Uwen geerden brief heden ontvangen, verzoek ik Ued hiermede onderstaande formulaar te willen volledigen ; dit formulaar moet door de Engelsche locaale Politie Overheden getekend worden, en terug gezonden aan

Je, soussigné
I, the undersigned
Ik, ondergeteekend } .....

No } ..... Rue
No } Street } .....
No } Straat }

demeurant à
living at
verblyvende } .....

déclare être en mesure d'héberger et de nourrir à mes frais pendant son congé en Grande Bretagne.
hereby declare that I am in a position to board and feed at my own expense during his leave in Great Britain.
verklaar hierby by eigene middelen te kunnen innemen en bekostigen gedurende zyn verblyf in Groot Brittanje.

Cette formule doit être visée par un représentant du Comité local, si l'invitant est soutenu par ce Comité. Dans ce cas, le militaire invité doit être mari, ou le père, ou le fils ou le frére de la personne qui invite.

In the case when the applicant is maintained by a Local Committee, this undertaking must be signed by a representative on behalf of the Local Committee and is only admissable in the case of a husband or father or son or brother.

Dit formulaar moet gezegeld worden door een lid der lokaal Komiteit, wanneer den uitnoodiger er door ondersteund wordt. In dit geval moet den soldaat echtgenoot, vader, of zoon of broeder van den uitnoodiger zyn.

Nom du soldat
Name of Soldier
Naam van den soldaat } .....

Adresse complète du soldat
Full Address of Soldier
Volledig addres van den soldaat } .....

Degré de parenté
Relationship
Verwandtschap } .....

Signature .....
Handteeken

..... 1917

CERTIFICATE.

I have no objection to the above-named soldier visiting this area and that the particulars are, as far as can be ascertained, correct.

.....
Chief of Police.

Date .....

I do not approve of the above-named soldier visiting this area.

.....
Chief of Police.

Date .....

N.B.—Pour le district de Londres l'approbation de la police doit être remplacée par celle du Transport Office, General Buildings, Aldwych
N.B —In the London area the consent of the Police must be replaced by that of the Transport Office, General Buildings, Aldwych.
N B.—Voor London en district de Toelating der Politie moet vervangen zijn door dat van den Transport Bureel, General Buildings, Aldwych

Prière écrire très lisiblement les noms et adresses afin d'éviter tous retards dans l'expédition des titres de congé.
Will you kindly note to write clearly the names and addresses, so as to avoid all delay in the forwarding of forms for leave.
Gelieft de namen en adressen zeer duidelijk te schryven om geenen tyd te verliezen in't opstuuren van de verlof briefen.

BELGIAN SOLDIERS ON LEAVE : THE FORM OF INVITATION.

Armée Belge.

Date_____ 191 . No._____

TITRE DE CONGÉ—VERLOFSBEWIJS—FURLOUGH PASS.

Le / De / *The* commandant le / bevelhebber van het / *commanding the* _____

accorde à (Nom) (Prénoms) / verleent aan (naam) (voornamen) / *grants to (Surname) (Chr. Names)* _____

(grade) / (rank) / (*rank*) — Numéro de la matricule / nummer / (*Soldier's No.*) — un congé de ... jours / een verlof van ... dagen om / *leave of ... days*

pour en jouir à / zich te begeven naar / *to be taken at* — sous l'obligation d'être / met verplichting terug aan / *with obligation to rejoin*

rentré à son corps le / zijn korps te zijn den ... 191 — à midi / 's middags / *his unit on the*

Empreinte du pouce gauche.

Sceau du Regiment.

Sceau du Commandant de la Gare Maritime.

Left thumb print.

Signature de l'officier accordant le congé.
Signature of officer granting the leave.

VU POUR _____

LE _____ 191 .

Commandant Militaire Belge
de la Gare Maritime de Calais.

Signature de porteur :
Handteekening Van den drager :

SIGNALEMENT.
DESCRIPTION.

Taille / *Height* — Age apparent / *Apparent Age*

Corpulence / *Build* — Cheveux / *Hair*

Signes particuliers / *Distinctive signs*

INVITATION.

Invité par

Adresse

Nom du militaire

Congé du _____ **au**

SCEAU

Le Commandant du Bureau des Congés.

LONDRES, LE ... 191 .

AVIS—BELANGRIJKBERICHT—IMPORTANT.

T.S.V.P.
P.T.O.

Pendant la durée de son séjour hors du Royaume-Uni il doit se conformer aux prescriptions applicables aux militaires en congé sur le Continent. En cas de perte du coupon, un nouveau coupon ne sera pas délivré gratuitement.

Gedurende het verlof van den soldaat buiten het Vereenigde Koningryk van Groot Bretanië moet hy in alle gevallen aan de verplichtingen voldoen dewelke de soldaten moeten vervullen op verlof in het buitenland. By verlies van den coupon, wordt geen anderen coupon kosteloos vergoed.

During the soldier's leave in France he must, in all cases, comply with the regulations as for soldiers on leave on the Continent. Take care of railway tickets; if lost will not be replaced.

TITRE DE CONGÉ (FRONT).

IMPORTANT.

AVIS.

1. Le porteur de ce titre de Congé doit être en tenue militaire pendant toute la durée de son congé.

2. En Grande Bretagne, le porteur est tenu de se présenter personnellement dès son arrivée et à chaque changement d'adresse à la police locale du lieu où il se rend et il doit accomplir la même formalité à son départ. Pour le district de Policé de Londres le porteur doit se presenter au Transport Superintendent (rez de chaussé), General Buildings, Aldwych, W.C.

3. Les prolongations de congé ne peuvent être sollicitées que pour des raisons exceptionnelles. Toute demande sera adressée au Lieutenant Général, Chef de la Mission Militaire, 35, Grosvenor Place, Londres, S.W.

4. Ce titre ne procure aucun privilège ni exemption spéciale des règlements ou prescriptions militaires.

5. Ce titre doit être produit à toute réquisition des autorités Belges où Françaises, et des officiers Britanniques suivants :—

Officiers de débarquement ou d'embarquement, ou "Port Officers."
Toute autorité militaire, ou toute personne déléguée.
Tout soldat ou matelot en faction ou chargé d'un service de surveillance.
Tout officier de police, Customs ou Excise, et tout Aliens Officier.

6. La perte de ce titre doit être immédiatement signalée par le propriétaire à la police locale, et au Commandant Belge de la place au port d'arrivée, soit en Angleterre soit en France. Le numéro du titre de Congé doit être indiqué à l'autorité militaire.

7. En cas de maladie le porteur de ce titre doit aviser immédiatement la police locale, et le Commandant du Bureau des Congés à Londres (General Buildings, Aldwych). Si le porteur du titre se trouve à Folkestone ou à Southampton, il avertira le Commandant Belge de la place.

8. Tout militaire arrivant en congé de convalescence en Angleterre doit immédiatement faire connaître son nom et son adresse au Directeur du Service de Santé Belge en Angleterre, King Albert's Hospital, 76, Gower Street, London.

NOTICE.

1. The bearer of this Pass must be in uniform during the entire period of his leave.

2. In Great Britain the bearer is warned that he must report himself in person to the local police on arrival at his destination and again on departure, or on any change of address. In the London District he must report to Transport Superintendent (ground floor), General Buildings, Aldwych, W.C.

3. Applications for extension of leave can only be made for very exceptional reasons; all applications must be made to the Lieutenant General, Chef de la Mission Militaire, 35, Grosvenor Place, London, S.W.

4. This Pass carries no privileges or exemptions from War Regulations or Orders.

5. This Pass must be produced for inspection on demand by any of the Belgian or French Authorities and by any of the following British Officials :—

Embarkation, Debarkation, or Port Officers.
Any Competent Military Authority, or person authorised by him.
Any soldier or sailor on sentry or patrol or other similar duty.
Any Officer of Police, Customs or Excise, or Aliens Officer.

6. The loss of this Pass must be notified immediately by the owner to the local police, and to the Belgian Embarkation Officer at the port of landing, whether in England or France. The number of the Pass must be notified to the military authorities.

7. In case of illness the bearer of this Pass must immediately advise the local police and the Officer commanding the Bureau des Congés, London (General Buildings, Aldwych), except when the bearer is in Folkestone or Southampton, when he will advise the Belgian Embarkation Officer.

8. Every soldier who comes to England on leave for reasons of health must immediately make known his name and address to the Directeur du Service de Santé Belge in England, King Albert's Hospital, 76, Gower Street, London.

BERICHT.

1.—De drager van een verlofsbewijs moet in uniform zijn gedurende den ganschen duur van zyn verlof.

2.—De drager wordt verwittigt dat in Engeland hij zich persoonlijk moet aanmelden bij de politie der plaats waar hij zich begeeft bij zijne aankomst, en bij iedere verandering van adres, en dat hij dezelfde formaliteit moet vervullen bij zijn vertrek. Voor London District moet den drager dezer zich aanbieden bij de Transport Superintendent (rez de chausse), General Buildings, Aldwych, London.

3.—Verlengingen van verlof mogen enkel aangevraagd worden voor bijzondere redens. Alle aanvraag zal gericht worden tot den Luitenant General, Hooft der Belgische Militaire Zending, 35, Grosvenor Place, London, S.W.

4.—Dit verlofsbewijs verschaft niet de minste voorkeur noch onttrekking aan de militaire wetten en voorschriften.

5.—Het verlofsbewijs moet vertoond wordon op gelijk welke aanvraag der Belgische of Fransche overheden, en der volgende Engelsche beambten :—

Officieren gelast met de ontscheping en de inscheping der mannen, alsook de havenmeesters.
Al de militaire overheden of hunne afgevaardigden.
Alle soldaten of matrozen op wacht of gelast met den overzichtsdienst.
Alle officieren der openbare macht, tolbeambten, enz.

6.—In geval de drager van een verlofsbewijs dit stuk zou komen te verliezen, moet hij er oogenblikkelijk kennis van geven aan de politie der plaats waar hij verblijft, alsook aan de Bevelhebber van het militaire bureel waar hij ontscheept is, hetzij in Engeland of Frankrijk. Hij moet ook de nummer van het verlofsbewijs opgeven aan de militaire overheid.

7.—In geval van ziekte, moet de drager er oogenblikkelijk bericht van geven aan de politie der plaats waar hij verblijft, alsook aan de Bevelhebber van het Verlofbureel te London (General Buildings, Aldwych). Wanneer de drager zich te Folkestone of te Southampton bevindt, zal hij heel eenvoudig de Bevelhebber van het militaire bureel der plaats verwittigen.

8.—Alle militairen die voor redenen van gezonheid conge in Engeland hebben moet en dadelyk hun naam en adres bekend maken aan den Directeur van den Service de Santé Belge in Engeland, King Albert's Hospital, 76, Gower Street, London.

TITRE DE CONGÉ (BACK).

To the Chief Constable: or
Superintendent of Police, at—

.....

TRANSPORT DEPARTMENT,
War Refugees,
General Buildings,
Aldwych, London, W.C. 2.

.....*191*

SIR,

The undermentioned Belgian { soldier has / soldiers have } been granted a period of leave and { is / are } proceeding to your district:—

SOLDIERS'			PROCEEDING TO	PERIOD OF LEAVE.		Congé No.
No.	Rank.	Name.		From	To	

I should be glad if I may be notified in case of non-arrivals, or in the case of any soldier whose congé form does not bear one of the numbers notified to you. This form should be returned with the report.

I am, Sir,

Yours truly,

H. CAMPBELL,
Transport Superintendent.

Form No. 212.

NOTICE TO POLICE IN LOCAL AREA.

CHAPTER XXII.

FREE TRANSPORT AND FREE SERVICES.

A CONSIDERABLE proportion of the work done by the railway companies under conditions of State control—and more especially so under the later phases of that control—was work in respect to which they received no direct cash payment. Hence their revenue receipts failed to afford any real index to the magnitude of their war-time services.

The primary reason for the practice adopted in these directions was the effecting of economy in effort by simplifying, as far as might be, the otherwise unduly complicated business in regard to travel or transport on Government account.

When the traffic carried or the service rendered was nominally "free" it meant that the clerical and accounting labour that would have been entailed by cash payments was obviated, the adoption of this course being the more practicable since the cost of such transportation or of such services on Government account, if not paid for at the time, would, theoretically, increase to a corresponding extent the deficit in the railway companies' accounts—as compared with those for the "standard" year of 1913—to be made good under the terms of the Government guarantee. It was thus considered that the Government would pay indirectly for that which they did not pay for directly. Inasmuch, also, as the Government were, by virtue of the guarantee, to be credited with the traffic receipts of the controlled companies, direct cash payments by them of rates, fares and charges would have been equivalent to the giving out of one purse what they would receive back into another.

The principle adopted was that when direct payments were not made to the companies, either for certain specified services in connection with transport not included in the railway rate or for other miscellaneous services apart from transport, the cost thereof should be charged by them in the normal course to working expenses, and recovered through the operation of the guarantee. Thus the cost remained a charge against the Exchequer, though it did not necessarily follow that such cost would have to be so met, or, at least, fully met.

The extent to which, in effect, it would be met by the Government, under the terms of the guarantee, depended on the difference between the net receipts of the controlled railways in any one year and those of 1913. Assuming, for the sake of argument, that the net receipts from direct cash payments for transportation services rendered to the

general public, or otherwise, attained to such a figure in any one year that there was no deficit as between that year and 1913, then it would follow that the Government traffic carried, or the subsidiary services rendered on Government account, without cash payment, would, indeed, be " free " since there would then be no deficit to be made good. Thus the only way of ascertaining whether or not anything done for the Government by the railway companies really was " free," or, alternatively, to what extent this may have been partially the case, is to compare the amount of the compensation due for any one year, under the guarantee, with the sum total of the charges the Government would have had to meet had they paid cash down for all that was done for them.

In order that data bearing on this point might be available, it was arranged by the Executive Committee that, while the railway companies raised no charges on traffic carried with " free " Government labels, the forwarding and receiving stations should supply the Audit or other headquarters offices of their company with particulars of all such traffic, so that an estimate could eventually be formed as to what the sum total of the charges against the Government would have amounted to if the traffic carried for them had all been dealt with on a cash basis.

Having regard to the general position, as thus presented, the word " free " is of uncertain significance, and it should here be regarded as meaning, in effect, no more than the carrying of traffic or the rendering of services in respect to which no direct cash payments were made.

Mention should also be made of the fact that while the railway companies did, under these circumstances, carry a prodigious amount of traffic for which they got no credit in their receipts, they were not themselves free agents in so far as regarded the concession of special facilities on their own initiative.

There came a time when almost everybody in Great Britain concerned with the conduct of the war, or engaged in what was regarded by the individuals themselves as " work of national importance," seemed to expect the Executive Committee in charge of Government-controlled railways to provide them with gratuitous, or semi-gratuitous, transport or travel. The fact was not realised that the committee had no power to make any such concessions without the authority of his Majesty's Treasury. Free traffic, whether of goods or of persons, implied a reduction in the receipts to which the Government looked for their financial set-off to the guarantee which they had given in 1914, and the Executive Committee had no right to interfere with Government money. The same considerations applied to reductions in rates and fares, although here, by arrangement with the Board of Trade, the committee were left to exercise some degree of discretion on the basis of certain principles by which they considered they should be guided.

The " free " system of transport did, nevertheless, undergo a very substantial expansion, and some idea of the extent to which it was developed is essential to a clear understanding of the magnitude and

the varied nature of the services rendered by the railway companies in this direction during the war period.

Dealing in the present Chapter with goods and parcels traffic, the fact should first be mentioned that, for about ten months after the outbreak of war, the only State departments entitled to free conveyance on the controlled railways were the War Office and the Admiralty. All the other departments then in existence made direct payments to the railway companies, State control notwithstanding, for the traffic carried on their behalf. When, however, the Ministry of Munitions, created in June, 1915, got to work, it was arranged that the munitions for which they became responsible should be conveyed free by rail mainly on the "carriers' notes" already in use by the War Office, though to a small extent, also, on the corresponding notes used by the Admiralty. Before long the output of munitions attained to such proportions that the War Office began to raise objections to the absorption of so many of its own carriers' notes for the conveyance of the traffic, on the ground that, from an accounting point of view, it had become difficult for that office to keep an adequate check upon notes for which it remained responsible although they were used by a different department. Thereupon a special consignment note was created for the Ministry of Munitions, so that there were now three departments having distinctive consignment notes entitling them to free transit for their goods, the others still making cash payments, as before.

This arrangement continued to operate even when, in November, 1916, the supplementary clauses were added to the original agreement between the Government and the railway companies. (See pp. 105–8.) The disadvantages due to the inconvenience and extra labour involved in the cash-payment system steadily increased in proportion as more and still more Government departments were created to meet new conditions in respect to the expansion of State control over commodities, or in other ways, and there was brought into existence, from August 1st, 1917, a new conveyance note (Form A/CS. Gen. 14) which was to be used by—as then specified—thirty different departments distinct from the War Office, the Admiralty and the Ministry of Munitions, each of which was to retain its own carriers' notes under the earlier arrangement. Goods and parcels traffic dispatched by any of the departments included on the list was thenceforward to be carried free of charge when the consignments were accompanied by the said conveyance notes, though the notes themselves were to be returned to the department which had issued them in order that the Government might, when the occasion arose, be able to recover from any contractor such amount as he himself should pay, the railway company concerned informing the department as to the rate which, in any such instance, should be charged.

The original list of thirty departments to which this arrangement applied was extended from time to time as further new departments, or new sections of existing departments (especially the Ministry of Food), were created, or to meet the requirements of, for example, the

Royal Air Force, which, when the food-rationing scheme came into operation, had to send supplies to the staffs at aerodromes constructed, or under construction, in places where adequate food would otherwise not have been procurable by them. In this and in other ways there was a constant readjustment of the rail-transport machinery to fresh or varying conditions, so that eventually the departments which could secure the free carriage of goods and parcels to be forwarded on Government account either by "controlled" railway routes or by combined railway and connecting sea routes, throughout, in Great Britain and Ireland, were as follows:—

Admiralty.
War Office.
  Director of Remounts.
Royal Air Force.
  Pigeon Service.
Home Forces—
  Pigeon Service.
Ministry of Munitions.
Colonial Wool Dept. (War Office).
Timber Controller (Board of Trade).
Board of Agriculture and Fisheries (Flax Production).
Board of Education.
Board of Trade.
Charity Commission.
Civil Service Commission.
Coal Controller.
Commission Internationale de Ravitaillement.
Customs and Excise.
Director of Information.
Exchequer and Audit.
Food Production.
Foreign Office.
Home Office.
Inland Revenue.
Local Government Board.
Ministry of Food (General).
  Butter.—Controlled by the Butter and Cheese Import Committee.
  Fish, Game, and Poultry Section.
  Frozen Meat.
  Live Stock (Cattle and Pigs for slaughter).
  Margarine and Compound (Edible Fats).—Controlled by the Margarine Clearing House.
  National Control of Tea.
  Vegetable Supplies Branch—
    Potatoes for consumption.
    Empty Potato Bags (stencilled "MF" and numbered) from Zonal Depôts to Collecting Dealers only.
Ministry of Labour (Employment Dept.).
Ministry of National Service.
Ministry of Shipping.
National Health Insurance.
National War Savings Committee.
Office of Woods.
Office of Works (except Fuel).
Ordnance Survey.
Principal Probate Registry.
Prisoners of War Bureau.
Registrar-General.
Registry of Friendly Societies.
Road Board.
Scientific and Industrial Research Dept. (including National Physical Laboratory).
Scotch Education Dept.
Scottish Office.
Treasury.
War Trade Dept.
Office of Works.
Postmaster General.
Stationery Office.

In some instances it was specified that the consignments were to be forwarded as goods-train traffic only, or that, when sent by passenger train, no single parcel was to exceed 112 lbs. in weight.

Traffic for Government departments not specifically mentioned in the above list, as, for example, the Navy and Army Canteen Board, the India Office and the Meteorological Office, was to be dealt with in all respects as under normal conditions.

Conveyance (including all services provided for in the rate) on behalf of the Admiralty, War Office, Air Ministry and Ministry of Munitions applied to all stores, arms, ammunition and other necessaries and things the carriage of which was authorised by certain specified " notes " whether for his Majesty's Government, for the Australian, Canadian, New Zealand, Newfoundland and South African Forces or the Belgian, French, Portuguese and United States Governments.

If, on joining up, recruits and reservists desired—as they generally did—to send their civilian clothing back to their homes, all they had to do was to make it up into a parcel and give in such parcel, properly addressed, at any railway station for gratuitous conveyance and delivery at domicile by the railway companies.

The label used for the transport of carrier pigeons for the Admiralty, the Home Forces, or the Royal Air Force might require the station-master at the point of arrival to carry out some such instructions as the following :—

F. S. Form 265.
ROYAL AIR FORCE.

ON HIS MAJESTY'S SERVICE.

Pigeons for Liberation by Railway Station Masters.

To the Station Master at .....

Please liberate these Birds on arrival *(Weather permitting) BUT NOT LATER THAN.....clear of all Telegraph Wires, Trees or other obstacles that might cause injury to the Birds.

If not liberated as above, please retain Birds until the following morning and liberate them before noon *(Weather permitting), OTHERWISE RETURN THEM BY RAIL.

Return Empty Basket to

via Station.

Liberated at
at o'clock.

* IMPORTANT.
Pigeons cannot fly at night, nor in fog or rain.

Free traffic for the Flax Production Branch of the Board of Agriculture included flax seed, fibre and straw, machine parts, and the baggage and bicycles of those persons who, in the summer of 1918, responded to the call of the Government for volunteers willing to go into the country and help to pick the flax crop. These volunteers were provided with free travel to the flax grounds and back, and free food during their fortnight's stay. Many of them were glad to get free transport for their bicycles as well in order that they might move about more freely.

Free transport of commodities had, however, much wider ramifications than even the above list of privileged departments of the State would suggest.

As early as the beginning of September, 1914, it was announced that parcels and packages of books, periodicals and clothing intended as gifts for H.M. Fleet or for the Expeditionary Force serving abroad would be conveyed over the British railways free of charge to various ports, provided that they were dispatched and consigned direct by a properly-

constituted and recognised organisation. A week later it was agreed to extend the free conveyance to other goods, such as chocolate, pipes, tobacco, boracic ointment, etc., when the consignments were sent in bulk by similar organisations or by newspaper offices making special collections. No free transport was granted in the case of packages sent by individuals to individuals or for goods forwarded to particular regiments or units.

Before long the making, collecting and forwarding of "comforts" and other gifts for the troops assumed such great and unregulated dimensions that in January, 1916, there was set up a central organisation under the control of Sir Edward Ward—upon whom was conferred the title of Director-General of Voluntary Organisations—in order to co-ordinate and control, as far as possible, the movement for sending gifts overseas as well as for their distribution in this country. A carrier's note, drawn up on lines agreed to between the War Office and the Railway Executive Committee, was issued for the free consignment of parcels and goods forwarded to or dispatched by this central body. There was no intention to do away entirely with the arrangements under which gifts consigned by "recognised" organisations were conveyed carriage free to the troops abroad, but it was hoped that eventually all such organisations would come under control of the Director-General of Voluntary Organisations, thus simplifying the work both of the railways and of the military authorities. After a time the acceptance by the railways of parcels of gifts for overseas from individual societies, etc., practically ceased. In any case, no parcels got free transport unless they bore the special carriers' notes provided for the purpose, while it was further stipulated that they should be over 11 lbs. and not more than 56 lbs. in weight. It was expected that up to 11 lbs. the parcels would go by post.

Of newspapers sent direct from London newspaper offices for the overseas forces the number was so great that towards the end of the war their aggregate weight averaged about 100 tons per day. Left at the railway stations by the newspaper delivery vans, they were conveyed free of charge to a French port, where the Military Forwarding Office took charge of them and distributed them among the various armies in the field. Most of this traffic was carried by the South Eastern and Chatham Railway.

Parcels for British prisoners of war in Germany were carried free by rail to London if bearing a special label addressed to the American Express Company, Rathbone Place, W., which company was, in February, 1915, when the United States still, of course, ranked as a neutral, appointed the agent of the British Government for the forwarding of this traffic.

Consignments of fruit-stones and nut-shells required by the Ministry of Munitions for conversion into charcoal to be used in anti-gas masks were carried free on the railways.

When the "National Egg Collection" was made, boxes of eggs addressed to the central depôt in London were carried by passenger train and delivered at headquarters without charge, and the returned

empties were also collected, conveyed and delivered, free of charge, within ordinary free cartage limits.

In December, 1917, the Railway Executive Committee consented to convey free of charge for the British and Foreign Sailors' Society, Sailors' Palace, Commercial Road, E., 20,000 portions of Christmas pudding which that Society desired to forward to the Senior Naval Officers at various naval bases for distribution among the men serving there on trawlers and drifters. A like course was adopted for Christmas, 1918, though on this occasion the Society increased the number of portions to about 25,000.

In addition to the actual transport of goods, parcels or live stock, all such other extraneous services as lighterage, labourage, storage or weighing (except the weighing of live stock), which the companies might be requested by the authorised Government officials to perform in connection with traffic carried free for a Government department were to be rendered gratuitously. Nor were demurrage charges in respect either to trucks or barges to be made. The feeding and watering of military horses and other live stock sent under the free transit arrangements were done by the railway people, as far as might be necessary, without any charges being raised. Teeming, or tipping, and trimming of Admiralty coal for ships of his Majesty's Navy, including transports, were also to be done by the railways under like conditions.

The practice of supplying hampers for military traffic was discouraged as far as possible—no doubt on account of the risk that hampers thus sent away might not be returned ; but, in case hampers should be supplied, they were not to be charged for.

The cost of maintaining sidings constructed on Government account, whether within or outside the boundary of any controlled company's property, was to be borne by that company.

No dock and harbour dues, and no berthing and mooring services were to be charged against the Government in respect to railway-owned docks and harbours.

Railway companies were themselves to clear any charges made on through Government traffic to ports, docks and harbours owned by some public authority, such as the Port of London Authority or the Mersey Dock and Harbour Board.

Other services there were which, though having no direct connection with rail transport, were no less performed by the railway companies, either free of charge or at cost price, as a matter of convenience to the Government and once more as a saving of departmental labour.

Thus in the event of a naval or military officer desiring a railway company to undertake, either itself or through an outside firm, small repairs on railway-owned steamboats, or small dock works (such as the construction of a shed for an office) at a cost not exceeding £10, the work was to be done without any charge being made. Should the cost of the work exceed £10, the authority of the War Office or the Admiralty was

required, and the railway company doing the work was then to be refunded the actual cost.

Railway companies provided water, gas, electric light and electric power free of charge to the offices, warehouses or other premises of Government departments on railway properties when they could do so from their own sources of supply, though where any special arrangement was installed or provided, and the charges raised thereon had to be paid to third parties, then, if the user could be measured, the company making the payment was to be reimbursed by the department for which the arrangement had been carried out.

No payment was to be asked for by the railway companies on account of work done either by themselves or by outside firms at their request for, or on, any railway-owned ship forming part of his Majesty's Fleet for the time being ; and the same practice applied in respect to food supplied or other services rendered on such occasions.

Should damage to the extent of not more than £100 be done by one of his Majesty's ships to any railway-owned boat not requisitioned by the State, no claim was to be made by the railway company affected. A like arrangement applied in the case of damage done to piers, stations and other properties for which railway companies were responsible, provided that such damage was not due to the culpable negligence or to the mischief of servants of the Crown. When the damage was attributable to one or other of these causes, then, irrespective of amount, and in all instances where the damage was in excess of £100, a direct cash reimbursement was to be made to the railway company by the department concerned.

CHAPTER XXIII.

RAILWAYS AND COASTING SERVICES.

Among the many developments brought about in transport conditions during the war-period, and for some time subsequent thereto, none were more remarkable and of more direct influence in disturbing the established order of things than those that effected a complete reversal in the circumstances under which so active a competition had been carried on between the railways and the coasting services since almost the advent of the railway era.

It is, in the first place, essential to a complete understanding of the subject in its various phases that one should bear in mind the large number of ports and places at which the coastwise traffic of the United Kingdom—representing what, apart from the pack-horse and the "wain" or the "long-wagon" of Britain's first carriers by road, ranks as the oldest of our transport enterprises—is carried on.

Number of Ports in the United Kingdom.

In the "Annual Statement of the Navigation and Shipping of the United Kingdom for the year 1913" [Cd. 7616]—to take the latest period of pre-war conditions—tables are given as to the traffic in that year at "principal ports." Of these a total of 116 home ports are included in tables 32, 33 and 34 (relating to overseas and coastwise traffic, separately and in combination), seventy-five being dealt with specifically either as single ports or as ports which include others (as, for example, "Liverpool, including Birkenhead," "Greenock, including Port Glasgow"), while the remaining forty-one are grouped as "Other Ports" under the headings of England and Wales, Isle of Man, Scotland and Ireland respectively, details concerning their traffic being given in another part of the Statement. The two groups are made up thus: Ports specified in the tables mentioned (75): England and Wales, 50; Scotland, 18; Ireland, 7. "Other Ports" (41): England and Wales, 17; Scotland, 12; Ireland, 9; Isle of Man, 3. Of the seventy-five principal ports twelve, namely, London, Liverpool, Manchester, Bristol, Southampton, Hull, Newcastle, Cardiff, Grimsby, Glasgow, Leith and Dundee, are regarded as leading ports. The remainder are ports of the second, third or fourth rank, according to their varying degrees of importance.

At the whole of the 116 ports, with the exception only of Scilly, vessels from foreign countries and British Possessions as well as coastwise vessels were received in 1913, though in fourteen instances the number of the former ranged only from one to five.

These figures from the "Annual Statement" are, however, exclusive of a far larger number of small seaports, harbours, landing-stages and river ports, situate in comparatively close succession around the coasts of Great Britain and Ireland, at which, in pre-war times at least, a considerable amount of trade (in the aggregate) was done. North and South Wales, right round from Penmaenmawr, Carnarvon, to Penarth, Glamorgan, must have some scores of these minor ports, too small for inclusion in Board of Trade statistics, but from or to which coal, slates, stone, copper, lead, tin ore, limestone, timber, pig-iron, firebricks, chemicals, provisions and domestic supplies for ports which in many instances are, also, market towns, and an endless assortment of other commodities were conveyed by coasting vessels either making regular sailings or else calling as traffic offered. Allowing for differences in local industries, etc., like conditions are found along the coasts of Devonshire and Cornwall, on the South Coast, on the East Coast and all around the coasts of Scotland, where, also, on the firths, up the lochs and more especially among the isles of the West Coast there is an almost endless number of towns, villages or hamlets whose communities are mainly if not wholly dependent on coasting vessels for all that they require from elsewhere. In the estuary of the Clyde alone there must be at least fifty places at which this condition of dependence on coasters prevails, although in regard to Scotland as a whole the number of ports specified in the "Annual Statement" (included therein being Kirkwall, Lerwick and Stornaway) is no more than thirty.

The existence of so many of these minor ports was a matter to which attention was called at the sittings of the Court of Inquiry held in the early part of 1920 under the Industrial Courts Act, 1919, concerning the wages and the conditions of employment of dock labour. Tables prepared from the "Annual Statement" of the Board of Trade were among the statistical data handed in by one of the witnesses, Mr. David H. Allan, chartered accountant, while, with a view to showing what the effect would be of applying to all ports alike a "universal national minimum" to the wages of dockers and transport workers, Sir Lynden Macassey, who represented a Provisional Committee of Port Employers, said that, apart from the ports mentioned on the tables prepared by Mr. Allan, there were 874 creeks, estuaries and bays around our coasts at which coastwise traffic was loaded or unloaded. Beyond these, he added, the official records showed 2,870 other small or insignificant places at which similar work was done in connection with coastwise vessels "as part of the ordinary work of the little town, or hamlet or place in question."

Inquiry shows that the figures quoted by Sir Lynden Macassey, however remarkable they may appear, are based on the results of an

official investigation made some years prior to the war, and, subject to the changes recently brought about in the conditions of coastwise traffic, they are to be regarded as perfectly correct to-day. The 874 are places where, in normal times, coasting traffic was regularly handled, whilst the 2,870 are still smaller places at which coastwise traffic either was or might be landed, under more or less primitive conditions, as occasion required. In some instances, for example, the coaster could not get alongside owing to the shallowness of the water and cargoes were discharged or taken on board with the help of small boats. In other instances the vessel would, in favourable weather, lie on the sand on the open coast, discharge at low tide and float off again on the rising tide.

Taking the various figures here given, we get a sum total of close on 4,000 ports and places around the British Isles at which either overseas or coasting traffic is, or was formerly, dealt with. It certainly is the case that in regard to a considerable proportion of this number (as, for example, those situate on the Scottish Isles and lochs) the question of rail competition would not arise. It is no less true that many would be very unpretending indeed, and quite negligible, from the point of view of "Navigation and Shipping." One must, however, bear in mind the possible dependence upon even the most insignificant among them of, in the aggregate, hundreds of local communities, although the cargoes landed may never have gone beyond the immediate district.

All these facts and considerations have a special significance as indicating the extent and importance of those coastwise interests the preservation of which, as will be shown later on, became a matter of national concern in the summer of 1919.

Coastwise Cargoes.

Statistics in respect to the traffic carried by coastwise vessels are available only for the ports included in the "Annual Statement." The aggregate for these in 1913 was, approximately, 70,000,000 tons, equally divided between imports and exports in the proportion of, in each instance, 20,000,000 tons of coal and 15,000,000 tons of general goods. The latter would consist mainly of (*a*) food supplies, raw materials and manufactured or partly-manufactured articles which, grown or produced in one part of the country, are transported for consumption or use in another; and (*b*) foreign transhipment goods arriving at or to be dispatched from the leading ports in ocean-going steamers.

One point of special interest in this connection is the relation that cargoes carried in coastwise vessels in 1913 bore to those carried in vessels from foreign countries and British Possessions as dealt with at the "Annual Statement" ports in question. Taking a few representative ports, great and small, one gets the following comparative figures in respect to vessels *arriving* with cargoes, as distinct from departures :—

Ports.	Foreign Countries and British Possessions.		Coastwise.	
	Vessels.	Tons.	Vessels.	Tons.
Barnstaple	20	3,049	1,782	97,092
Bridgwater	34	8,925	1,692	104,528
Cardiff	1,602	1,412,135	2,862	387,472
Fleetwood	35	27,407	889	281,499
Fowey	43	9,546	1,020	85,394
Grimsby	1,618	978,499	324	64,935
Liverpool (including Birkenhead)	3,531	9,374,642	11,256	2,184,493
London	9,821	11,712,969	11,845	5,725,607
Padstow	3	559	252	22,565
Poole	188	26,330	518	92,614
Preston	198	139,124	1,120	130,200
Southampton	2,396	3,206,423	5,131	986,613
Swansea	1,039	657,300	1,681	305,710
Whitby	3	524	49	7,523
Aberdeen	912	204,401	2,721	836,215
Arbroath	1	123	104	7,026
Glasgow	1,288	2,699,856	7,593	1,513,870

Coasting Vessels.

Under normal conditions the coasting vessels employed were of three types—(1) Regular coasting liners, (2) colliers, and (3) tramps, including sailing ships.

Regular liners had their own berths in the leading ports. In addition to carrying home merchandise, they received from, or delivered to, ocean liners or ocean tramps goods either for further distribution here or for transport to places overseas, and they carried on fixed services covering, altogether, the entire coasts of Great Britain and the chief ports of Ireland. In this way they formed a connecting link between one great port and another and, also, between the great ports and lesser ones unable to accommodate big ships bringing cargoes from overseas.

Of the colliers, many conveyed coal on regular routes, as, for instance, from Northumberland or Durham for gas-works and other industrial establishments on the banks of the Thames.

The tramps (including sailing vessels) conveyed cargoes of coal or other commodities to or from smaller ports to which it might not be worth while for the larger type of coasters to go, or, alternatively, which might not be able to accommodate the latter. Chartered tramps, carrying full cargoes, supplemented the coasting liners in facilitating the discharge of ocean-going steamers; they diminished the risk of congestion at the great ports; they were the main support of the smaller

ones, while the populations within the areas they served were largely dependent upon them for the supply of their industrial and domestic needs.

Rail *versus* Water.

In competing for either domestic or foreign-transhipment traffic arising at the different ports—whatever their respective size and importance—the railways were often at a great disadvantage inasmuch as, under peace conditions, intercommunication by sea between the ports and harbours around our coasts was bound to cost relatively less than communication between the same points by rail.

This was the case if only because the shipowner, unlike a railway company, uses a natural highway free to all the world, and, while providing a vessel which, as a transport unit, may be set against locomotive and railway wagons, is under no necessity to acquire land for a special track; to construct a railroad passing, it may be, through long tunnels, across costly bridges or viaducts, or surmounting heavy gradients; to organise elaborate signalling and other arrangements, including the employment of a large staff, for the operation and maintenance of every mile of track, and then to have to pay toll, in the form of local rates—in respect, not alone to property owned but to the amount of traffic carried—to every local authority through whose district the railway lines may require to pass, even although the company concerned may not have even a railway station therein. So it might well happen under normal conditions that the freight per ton for a consignment to or from even a distant country worked out at a substantially lower figure than the corresponding railway rate for a comparatively short distance; though the difference in the respective circumstances and conditions left no basis for a fair comparison.

In practically every instance in which the element of competition with coasting vessels arose, regard had to be paid, in fixing the basis of the railway rates and charges, to the freight and charges in respect to the corresponding shipping services, *plus* the addition thereto of an allowance for any such increased facility or advantage offered by the railways as might justify the asking of a larger sum in the case of the latter than in that of the former. It was a matter of organising an extensive system of exceptional rates and of charging *no more than* "the traffic would bear" if the railways wanted to carry it at all—as, in fact, they were often unable to do because the shipowner could offer much lower terms to the trader.

Nor was the effect of this competition of the coasting services with the railways limited only to traffic between the ports directly concerned. Each and every one of those ports, great or small, might be and invariably was a collecting and distributing centre for coastwise traffic within a given radius, or in connection with towns extending along the coast in either direction. In the case of certain ports, such as Goole and Gloucester, this inland distribution was facilitated by their connection with

exceptionally efficient canal services. Then the railway rates from, say, London to some inland point not far from the coast for commodities which might otherwise go partly by water, were governed by the shipping freight from London to a convenient port, *plus* the cost of road carriage by local carrier.

Examples such as these represented the earliest expansion of coasting competition, as affecting the ports themselves; but the time came when the coastwise shipping companies adopted the expedient of quoting to inland traders a through rate which comprised, according to circumstances, (1) rail transport from the point of dispatch to the port; (2) conveyance by coasting steamer from one port to another, and (3) the cost of carriage from the port of discharge, including delivery at the consignee's door. Under this arrangement the shipping company itself paid the ordinary railway rate and charges at either end, or both, of the point-to-point transport, and depended for its profit on the portion of the through rate allowed for the sea journey.

Operating on these lines, there were coasting-steamship owners who advertised that "the goods services of the company extend far beyond the immediate ports at which the vessels ply," and that "an extensive list of through rates for goods is in operation from interior Scotch towns to interior English towns, and vice versa." At Cardiff seven lines of coasting steamers carrying general cargo called regularly in pre-war days with or for traffic from or to London, Liverpool, Manchester, Dublin, Belfast, Glasgow, Greenock, Leith, Dundee, English East Coast ports, Southampton, Bristol, etc., and rates were quoted for between 200 and 300 places, including combined rail and steamship rates for goods between all stations in South Wales and all stations in Scotland and Ireland.

For many years the coastwise shipping interests had complained that the railway companies were cutting into the port traffic. It was now the turn of the railway companies to complain more vigorously than ever that the shipping interests were cutting into the rail traffic.

With the combination of rail transport and coasting services, the original radius of, say, twenty miles when goods were conveyed by road from port to domicile was generally extended to one of at least fifty miles when they were collected or distributed by a supplementary rail journey; though in this respect the interests of the railway companies were not always identical since it would be to the advantage of, for example, a southern company to convey to a port on its own system traffic for Scotland which, if it went all the way by rail, that company might not handle at all, while the northern companies would be losers by being deprived of a long haul. It was generally a case of two short hauls by rail and a long sea journey being substituted for a throughout-journey by rail.

With the very considerable development of motor traction, the extent of the Hinterland that might be served from or in connection with each particular port underwent a steadily-increasing expansion;

and therewith came a still greater possibility that railway companies which had previously gained by securing a short haul of traffic to or from a port might be deprived by the road motors of even this advantage, long-distance traffic from one inland point to another being then conveyed by road and sea in combination without touching a railway at all.

The indirect effect of coastwise shipping competition on inland railway rates was even greater because, as was pointed out as far back as 1872 by the Select Committee on Railway Companies' Amalgamations :—

> A reduction in the cost of carriage affecting any description of goods carried to market from any one place will rule the cost of the carriage of the same description of goods carried to the same market from other places. So that if by sea competition the charge for carrying coals from Newcastle to London is reduced, that reduction will rule the charge for carrying coals from any other place to London.

Still further, the element of sea competition gave rise to endless anomalies and inconsistencies, as, for instance, in the lower rates charged on goods for overseas exportation from one port in keen competition with another than on goods sent to the same port of shipment for local consumption ; the higher rate for an intermediate point not affected by the coasting services than for the longer distance to a port, and in various other ways, besides.

Calculations have been made from time to time by different authorities as to the approximate percentage of rates in operation in the British Isles which—under pre-war conditions—were controlled directly or indirectly by sea competition. While one may hesitate to adopt any definite figure, there can be no doubt that by far the largest proportion, at least, of those rates have been so controlled, and that the factor in question has influenced the fixing of railway rates in the United Kingdom to a greater extent than has been the case either in the United States or in any country on the Continent of Europe.

Such was the situation, as between the railways and the coasting services, on the outbreak of the war ; and with the crisis then brought about there was initiated, with almost overwhelming suddenness, a prolonged and varying series of developments leading to changes which, from a transport point of view, were almost revolutionary in their character.

Emergency Rates.

Within ten days of the declaration of war the question was raised at a meeting of the Railway Executive Committee as to what action should be taken in regard to putting into force emergency rates for the conveyance of traffic which, instead of going by coasting steamer for the whole or the greater part of a journey, as in the past, might have to be carried from point to point by rail, owing to the disturbed shipping conditions. The subject was deferred for further consideration, though it was revived only three days later on a report being made that an

exceptional rate had been quoted by the railway companies concerned for a consignment of 500 tons of steel bars from works in Yorkshire to Newport, Mon., this being traffic that previously would have gone by sea. Thereupon the Railway Executive appointed a sub-committee to draw up the conditions governing the procedure to be adopted in all cases of requests for exceptional rates under war-time conditions, it being understood that such rates would, in each instance, be quoted by or on the authority of the Railway Executive Committee. Two memoranda dealing with the subject were accordingly prepared. They were presented to and approved by the Executive Committee on August 20th, 1914, and on August 29th, that committee issued to the controlled railway companies an "Instruction" which said:—

> In the event of exceptional emergency rates being required to meet the special conditions brought about by the war (as distinct from ordinary commercial applications), such as when traffic hitherto carried by sea can no longer be so carried on account of the sea route being closed or where unless traffic passes works will be closed and a number of men thrown out of employment if a rate is not quoted substantially below what would be demanded in ordinary circumstances, the applications for such rates must in all cases be submitted with full particulars to the Sub-Committee of Goods Managers of certain companies for consideration at meetings held at the Railway Clearing House every Tuesday. If, after the investigation, it is found that a new or reduced rate is required, a recommendation will be given to the Executive Committee, and any quotation necessary will be given, not by the individual companies, but by the Executive Committee, who will advise the Board of Trade.

In the first instance the emergency rates asked for applied more especially to home-grown pit-wood, taking the place of imports, and to supplies of raw materials for iron and steel works in Scotland or South Wales which in pre-war days had gone by coasting vessels. In proportion as the Government commandeered more and still more of the coasting vessels, or as the Admiralty required to make use of them for the coaling of the Fleet, it became increasingly difficult to get the traffic moved by sea. In the case, also, of the Scottish iron foundries, situate mainly in the Falkirk and Glasgow districts, the closing of the Forth above Queensferry (Forth Bridge) to mercantile vessels made the shipment from Middlesbrough to Grangemouth and the distribution thence of the large quantities of pig-iron required by works in Scotland no longer practicable even if the necessary vessels could have been obtained. The foundries were, consequently, being stopped through shortage of supplies, and the outlook began to grow somewhat serious. In regard to South Wales it was affirmed that shipping facilities were almost unprocurable, that important works were at a standstill, and that many of them would have to close down altogether unless special emergency rates, introduced temporarily to relieve the situation, could be granted.

There was at this time no suggestion that the railways themselves would not be able to undertake the transport of traffic diverted from sea to rail. The only point then involved was the plea advanced by

the traders to the effect that businesses organised on the basis of sea freights could not be continued if railway rates had to be paid instead. Hence the requests for emergency rates more or less on a level with the sea freights previously paid.

At the outset there was a tendency to speak of the rates in question as "exceptional," "emergency" or "exceptional-emergency" rates, indiscriminately; but, although they were certainly "exceptional" to the ordinary class rates, there were fundamental differences, alike in principle and in practice, between emergency rates and the ordinary exceptional rates already so well known to traders.

Mr. H. Marriott, in his book on "The Fixing of Rates and Fares," says that the main considerations which are taken into account in the fixing of exceptional rates are:—

(*a*) The volume and regularity of traffic between the points concerned.
(*b*) The weight per ton and per truck which can be obtained.
(*c*) The general earning power of the traffic.
(*d*) The liability or otherwise to damage.
(*e*) The competition, direct or indirect, by water or road, or by other means.
(*f*) A general consideration of what the traffic will bear.

Mr. Marriott also says that probably about 70 per cent. of the traffic between stations in the North of England is conveyed at exceptional rates "much below the statutory authority." There are, in fact, millions of such rates in existence.

Under the obligations imposed upon the railway companies by the Railway and Canal Traffic Acts, these exceptional rates, when granted, must be put on the rates books at all stations where they are in force in order that they may be available for any trader who can comply with the conditions attached to them; while under the Act of 1894 it is provided that, in the event (1) of a railway company directly or indirectly increasing any rate or charge since December 31st, 1892, and (2) of any complaint being made that such rate or charge is unreasonable, it shall lie upon the company to prove that the increase is reasonable, even although the rate may still be below the maximum. In other words, the exceptional rates are as permanent in character as the "class" rates, the only difference between them being that they are fixed on a different basis.

"Emergency" rates—as they were at last definitely called—were, on the other hand, temporary rates designed to meet an "emergency" arising out of war-time conditions; they were to remain in operation only so long as that emergency—and not necessarily the full war-period—should continue; they were granted to individual firms and not entered in the station rate books as in the case of exceptional rates, while in each instance it was expressly stated by the Railway Executive Committee in announcing the concession that "The committee reserve the right to alter or withdraw any of the rates or conditions without notice."

Emergency rates were thus regarded as free from the obligations, the restrictions and the permanency of exceptional rates.

They had not been known by that name before the war, but they were not without precedent under commercial conditions. A limited number of cases had arisen, such as, for example, that of a contractor under a large contract necessitating a considerable volume of traffic to some destination to which no exceptional rate was in operation owing to the fact that traffic of the kind in question had not passed previously on any large scale. The contractor would ask for a special rate and one would be given to him for the duration of his contract. The rate might or might not be put on the rate book; but, if it were, it would be expressly quoted as a temporary rate. There was considered to be good ground for contending that a rate of this type would not be subject to the provisions of the Act of 1894 and that its withdrawal at the end of the period would not be an increase direct or indirect of any rate within the meaning of that Act. In any case this view, so far as can be ascertained, was never challenged.

Rates thus granted to serve a special occasion may be regarded as on a par with the rates granted temporarily to meet a special emergency —one, namely, arising out of the war; and here, again, the action taken either in their concession or in their withdrawal was not challenged, the more so as their acceptance by the traders on the understanding applying to them was looked upon as absolving the companies from any responsibilities they might otherwise incur under the Railway and Canal Traffic Acts. Nor did the question of undue preference arise since, although the rates were granted to the individual firms applying for them in the first instance, they were extended to other firms asking for them under the same or similar circumstances and conditions.

During the first four months of the war the Railway Executive Committee conceded these emergency rates somewhat freely, though it was made clear that they related exclusively to traffics which had formerly passed regularly by sea. In each instance, also, the concession was expressly stated to apply only in the event of normal supplies not being procurable by sea. In respect to pig-iron, for example, the words were used: "This quotation to apply where, owing to the war conditions, the sailings are intermittent and not such as to allow the works to be continuously supplied with pig-iron." A further condition invariably made was that the rate would apply only to traffic carried in specified quantities. An emergency rate for pig-iron from Middlesbrough to certain stations in Scotland was granted with the proviso: "The traffic must pass in full wagon loads and in lots of not less than 100 tons." A rate for South Wales was granted with the stipulation that the traffic passed "in lots of not less than 500 tons"; though in certain instances in which such quantities as 500 tons were fixed it was added that, if these minimum consignments could not be made up, owing to a scarcity of wagons, special consideration would be shown by the companies. Other examples of the fixing of specified quantities included: Anthracite coal, from Swansea to Middlesbrough—full train loads of not less than 250 tons. Scrap iron, London to South Wales—truck loads of not

less than six tons and in lots of not less than fifty tons. Tin plates and black-plates, Swansea district to Hull—lots of ten tons or over.

In January, 1915, there was a request for an emergency rate for natural-stone flags, slates, etc., from quarries and works in the Thurso district of Scotland. Normally, it was stated, the traffic in these products, amounting to about 8,000 tons per annum, was nearly all carried by sea at cheap rates from the harbours of Thurso and Castletown (on the east of Thurso) to ports in the United Kingdom.[1] The English trade, however, had been stopped for three months, and, the distances being so great, there was no prospect of re-opening it until the existing shipping difficulties had been overcome. There was still the possibility of preserving one considerable market—that of Glasgow; but the traffic would have to go there by rail, and any material increase in the cost of transport over the former sea freight would make it impossible to secure sales owing to the number of cheaper substitutes for the class of goods in question. If only there could be conceded an emergency rate that would permit of the Glasgow market being maintained, the industry would be kept going and the need to close down would be avoided. A lower rate from Thurso to Glasgow was accordingly granted, the traffic to pass in truck loads of not less than six tons and in lots of not less than fifty tons.

In many instances special emergency rates were refused on the ground that the traffic was not passing in sufficient quantities, that the existing rates were sufficiently low, or that the making of the desired concession would unduly disturb the rates with other places. In a number of cases the Goods Managers Committee adopted an alternative course, recommending "that the firm be informed that the Executive Committee are unable to see their way to grant an emergency rate, and that they will receive through the —— Railway Company a quotation of the lowest commercial rate which the companies are prepared to put in operation for the traffic." "Modified (i.e., temporary commercial)" rates granted under these conditions were lower than the existing rates, and, though not so low as emergency rates, were not subject to the same conditions.

At the end of April, 1915, the whole of the emergency rates which had been granted in respect to scrap iron—as, for example, between London and South Wales, London and the North-eastern district, Portsmouth and South Wales—were withdrawn on the ground that the traffic was not passing in sufficient quantities, and the ordinary commercial rates were resumed as from May 1st. Having regard, also, to the increased prices being obtained for pig-iron in the summer of 1915, some of the emergency rates relating to that commodity were cancelled as from August 1st. Others were increased, the same conditions applying to them as before. Strong protests were made by certain traders, who represented that their businesses had to be conducted on contracts extending over

[1] Neither Thurso nor Castletown is included among the Scottish ports given in the Annual Statement of Navigation and Shipping for 1913.

definite periods, that they had based certain of those contracts on the emergency rates, and that withdrawal or increase of the rates would be of great disadvantage to them. To this it was replied that in quoting the emergency rates the Executive Committee had given a clear intimation that they reserved the right to alter or cancel any of them without notice, and if, in these circumstances, contracts were entered into without reservation, such a procedure was at the risk of the contracting parties. Advances were also made in other emergency rates, though these advances still left them below the existing ordinary rates. In March, 1916, it was considered by the Goods Managers Committee—and the Railway Executive endorsed their view—that the special purpose for which the emergency rates as a whole were originally granted, namely, for enabling firms to keep their works going, had been sufficiently served, and that, having regard to the altered conditions then prevailing, the emergency rates still in operation should, with the exception of those applying to home-grown pit-wood, be cancelled on and from April 30th, 1916, commercial rates being substituted for them. Notices were issued accordingly to the traders concerned. The number of emergency rates then finally withdrawn was twenty-one, included therein being six which related to pig-iron, Class B.

Traffic Diversion.

The policy thus adopted by the railway interests was abundantly warranted by subsequent events. In the course of another eighteen months or so, it was no longer a question either of the railways being unable to compete with the coasting services or of the traders being unable to consign by rail unless they got special emergency rates. It now became a case of the coasting services—or such of them as remained in operation—being unable to compete with the railways ; of the traders gladly paying commercial railway rates for what had become the cheaper form of transport ; of the railway companies having to deal with huge volumes of traffic which had formerly gone by sea, and of so much trouble and difficulty arising all round that measures had to be adopted to relieve what was rapidly developing into an impossible position.

In the first place there was the increasing scarcity of shipping. The drain upon the various types of coasting vessels for the purposes of the war went on almost unceasingly. War losses among coasting tramps were exceptionally heavy. Other vessels, including the sailing barges which had previously carried on business along the South-east coast, took up more remunerative work elsewhere, and especially so in the direction of trading with France.

Then, partly on account of the diversion of so much of the coastal shipping to Admiralty purposes and partly for various other reasons arising out of the general situation, there was a great decrease in the coasting services. Many were suspended altogether. Others were continued with a substantially reduced number of sailings. From North-

eastern ports—Hull, Goole, West Hartlepool, Middlesbrough, Stockton, Sunderland and Newcastle-on-Tyne—there were before the war forty-nine regular services of coasting vessels to thirty-nine destinations. Under war-time conditions there were seven sailings to thirteen destinations. Taking the port of Hull, alone, the twenty-three pre-war services to thirteen destinations declined to three services to four destinations. From Liverpool there were in 1914 coasting services to sixty-four ports. This number was at one period of the war reduced to ten. The coastal services between Leith and Aberdeen and, also, that between Inverness, Wick and Thurso were suspended. The closing of the Firth of Forth against general cargo affected Granton, Bo'ness, Grangemouth, Charlestown and Alloa. At Dundee the coasting service formerly running two or three times a week was reduced to one sailing every ten days.

These examples are typical of what went on more or less around our coasts.

Even when steamers were available, many of them were running with a considerable proportion of unoccupied space, while the cargo they did carry was hardly sufficient to warrant their running at all. The reasons were (1) the risk of loss through enemy submarines, and (2) the fact that, whereas the shipping freights had greatly expanded, the railway rates remained at their pre-war level. The railway companies had power to reduce their rates, but they were not free to raise them, although the railways constituted the only form of transport still being operated in respect to rates and charges on a pre-war basis. The increased cost of working and of materials in the case of the coasting services had to be made good out of the freights charged to the trader, whereas the increased cost in that of the railways was covered by the Government guarantee. There was an additional heavy handicap on the coasting traffic, down to the conclusion of hostilities, by reason of the war-risk insurance alike on vessels and on cargoes. Competition on commercial lines was thus suspended for the time being, and the railways, constituting the cheaper form of transport, got far more traffic than they could carry, while traders who had formerly consigned exclusively by coasting services now practically refused to send by them at all whenever they could forward by rail instead.

With the increasing gravity of the submarine menace, the continued diversion of coastwise shipping to other purposes, and the constant rise in freights, the volume of sea-traffic of former days for which rail transport was now sought became greater than ever. Prior to the war, it was, for example, a very rare occurrence for pig-iron to be sent by rail from the Furness Company's district to Glasgow ; but by the end of 1917 the Company were dealing with 14,000 tons per month. The Caledonian were conveying from Glasgow or Leith considerable volumes of iron ore, foodstuffs and munitions of war landed there by ocean-going steamers for various destinations in England. The Glasgow and South Western got a very heavy traffic at Glasgow (Princes

Dock) for London and elsewhere in the South. The Hull and Barnsley were carrying from Hull substantial quantities of oil, timber, resin, oats, bacon, etc., for London, and steel, linseed, timber, lead and iron ore for Boston, Lynn, the Manchester Docks, Edinburgh, Leith, Glasgow and other places to which the coastwise services from Hull were not then running.

The sum total of the reduction in coastwise traffic during 1917, as compared with pre-war conditions, was officially estimated at 15,000,000 tons.

The "Refusal of Traffic" Question.

All this diversion of traffic from sea to rail, whether due to the closing of ports, to the reduction in shipping or to economical considerations on the part of the trader, became a source of considerable embarrassment to the railway companies who, with depleted staffs and reduced facilities, were struggling to keep pace with the abnormal and ever-expanding Government traffic. Not only, too, was the coastwise business of former days being turned on to the railways in what constituted, in the aggregate, great volumes, but much of it involved a long haulage, and especially so in the case of that which passed between Scotland and England.

Early in March, 1918, there came an intimation that more coal would have to be sent to the Continent—the position of the coal supplies in France was, in fact, at that time becoming very critical—and that a number of the vessels still engaged on the coastal services would have to be diverted from their usual occupation in order that these deliveries could be effected. The whole situation was powerfully affected by this announcement. It was foreseen that, not only would the considerable quantities of coal going by coasting vessels to London for public utility undertakings have to be transferred to the railways, but the same would be the case in regard to a large tonnage of general traffic then being carried throughout by sea.

Having regard to the general position of the railways at that time, the possible results of these new developments were so disturbing that the Joint Committee of Representatives of Government Departments and of the Railway Executive Committee decided, at a meeting held on March 6th, to appoint local committees, consisting of representatives of the Port and Transit Executive Committee and of the railway companies, in order that they might confer with a view to securing that the best possible use should be made of whatever services were available for carrying the traffic, whether by sea or by rail. At the next meeting of the Joint Committee, Sir Norman Hill (Ministry of Shipping) said that while action was being taken in the direction stated, the difficulty due to the natural disinclination of traders and freighters to send traffic by coastwise service (even when such service was available), if it were possible to forward at lower rates by rail could, in his opinion, be met only by the railway companies definitely refusing to convey traffic under these conditions.

Inasmuch, however, as the railway companies had no legal power to refuse to convey the traffic, it was not open to them to resort to the proposed remedy. In April the Port and Transit Executive Committee submitted to the Railway Executive Committee the necessity for their obtaining at an early date power to refuse traffic which could be carried either by coasting services or by canal. "It is realised," said the communication forwarded, "that this committee will not be able to afford substantial relief to the railways in the direction of providing transport either by coasting services or canals so long as the owners of the cargo remain in the hope that their goods will be ultimately carried by railways. Only a definite refusal to carry the traffic by rail will throw it on the less attractive route."

Thereupon the Railway Executive Committee suggested to the President of the Board of Trade that some proposed additions to Regulation 7 B of the Defence of the Realm Regulations should be supplemented by a paragraph giving the Board of Trade power to make an Order authorising railway companies to refuse goods traffic tendered to them for conveyance when other means of transport were available. This course was adopted by the President, and Regulation 7 B—which had already provided "That the Board of Trade may, for the purpose of making the most efficient use of railway plant or labour, with a view to the successful prosecution of the war, make Orders for all or any of" certain specified purposes—included the following among those purposes when issued in its amended form on April 27th, 1918:—

(*k*) For enabling railway companies to refuse to accept goods for carriage by rail where other means of transport exist, subject to such conditions as may be prescribed by the Order.

This, it will be seen, did no more than give the Board of Trade power to make an Order, and, until an Order was so made, the position of the railways remained as before; but an impression prevailed somewhat generally that the railway companies had now actually acquired authority to refuse traffic under the circumstances stated, and the attitude of the traders was, for a time, modified accordingly.

Home Trade Transport Control Committee.

The erroneous impression may have been strengthened by the fact that in June, 1918, there was created a Home Trade Transport Control Committee which, consisting of representatives of the Home Trade Branch of the Ministry of Shipping, the Railway Executive Committee, the Port and Transit Executive Committee and the Canal Control Committee, was to ensure that the best use would be made of the transport facilities offered by railways, coastal services and canals respectively. The Home Trade Transport Committee was to act through District Committees consisting, in turn, of representatives of these three interests and of the local port authorities at the following places: Bristol (covering the Bristol Channel), Glasgow (covering the West of Scot-

land), Hull (covering the Humber and East-coast ports), Leith (covering Edinburgh and the East Coast of Scotland), London, the Mersey (covering Liverpool, Manchester, Birkenhead and West-coast ports) and Newcastle (covering the Tyne and Tees). The general principle upon which the committee proposed to operate was that all traffic, including Government traffic, foodstuffs, etc., for which there was an alternative route by water should be refused rail carriage unless (*a*) in regard to Government traffic, the department concerned required carriage by rail, and (*b*) in regard to other traffic, it was accompanied by a certificate issued with the authority of the committee. It was further proposed that the committee should draw up lists of traffics to which the arrangements in question would apply.

Some really useful work was done by the various local committees. During the months of July, August, September and October, 1918, they secured the diversion from rail to water of close on 348,000 tons of traffic.

This diversion applied to ports and destinations as follows :—

From ports in		To
Bristol District	..	Liverpool, London and Glasgow.
Glasgow ,,	..	London, Bristol, Cardiff, Manchester, Liverpool and Swansea.
Hull ,,	..	London and Scottish ports.
Leith ,,	..	Liverpool and London.
London ,,	..	Liverpool, Glasgow, Leith, Newcastle and Bristol Channel ports.
Mersey ,,	..	Glasgow, Swansea, Bristol, London, Hull and Leith.
Newcastle ,,	..	Aberdeen, Hull, Leith and London.

The special significance of this table lies in the long haulage that would have been entailed in almost every instance if the traffic had gone by rail instead of by water. Complete success of the scheme was, however, rendered unattainable by the fact that the local committees had no power to enforce their arrangements, and throughout the period in question, as had been the experience before, cases were constantly occurring in which traders, with their preference for the cheaper rail transport, refused to make use of the coastal services, some of which were getting such inadequate support that the question was being considered as to whether still more of them should not be discontinued.

Meanwhile a " Refusal of Goods Order," in accordance with the powers conferred by Regulation 7 B (*k*), had been drawn up by the Board of Trade, acting in consultation with the Railway Executive Committee and the departments concerned, but the Order itself had not been issued down to the time of the signing of the Armistice.

The question now arose as to whether, having regard to the altered conditions, there was any necessity for the issue of the proposed Order ; but such relief as had been afforded to the railways by the decrease in the flow of war material was neutralised to a considerable extent by the demobilisation movement and the greater influx of foreign trade. Then the fact that the railways still had no power to refuse traffic, inas-

much as the Board of Trade had not exercised its power to issue an Order to that effect, had become more generally recognised, while traders who had been willing to consign by water under the pressure of war conditions were inclined, now the war was over, to challenge the right of the local committees in seeking to divert the traffic from rail to the more expensive form of transport. In the case, for example, of tinplates sent from Swansea to Liverpool—a traffic which prior to the war went almost entirely by sea—the lowest coastal rate on November 25th, 1918, was 25*s.* per ton, plus the carriage from works to port, as compared with a throughout rail rate from works to destination of 13*s.* per ton. In pre-war days the coastal rate ranged from 7*s.* 6*d.* to 10*s.* per ton.

Examples of Traffic Diversion.

For a short period during the early part of 1919 there was a falling off in the demand for rolling stock; but the relief thus afforded was of short duration, and by June in that same year there had been a steady accumulation of evidence as to the extent to which the pre-war coastal traffic was still being diverted to the railways. A few examples from the experiences of certain companies may serve to show how the railways either had been or still were being affected by the obligation imposed upon them to convey traffic previously carried either entirely by sea or partly by sea and partly by rail:—

Caledonian.—Pig-iron, from North-Eastern and Midland districts of England to Motherwell, Mossend, Newton, Langloan, Flemington and Bridgeton, 7,000 tons per week; bricks, from Great Western stations to Motherwell, 250 tons per week; salt, from Winsford and Middlewich to Glasgow and Aberdeen, 100 tons per week; wood pulp, Liverpool to Aberdeen, 100 tons per week. During the season 1917–1918 there were carried from the Perth district over 93,000 tons of potatoes, including 58,000 consigned to stations in England. In pre-war days a great part of this traffic was shipped from different Scotch ports to England. In June, 1919, the Caledonian was dealing with more than twice as much traffic to and from England as in normal times.

Great Western.—China clay and china stone, Cornwall to North Staffordshire, 3,500 tons per month; gas coal, Yorkshire coal-fields to Plymouth, 900 tons per week; Government stores, Woolwich, Otteringham and Alexandra Dock to Gloucester, 111 trucks in one week; tinplates from South Wales, 8,395 tons in four months; coal, South Wales to Kingswear, 10,500 tons in three months; ditto, to Torre, 3,000 tons per month (and other large quantities to various stations); pig-iron, Frodingham to Landore, 800 tons per week; pulp, Hull and London to Watchet, 830 tons in three months; copper sulphate, Clydach to Royal Albert Dock, 300 tons.

London and North Western.—Company asked (May, 1919) to run special trains, each with 35 wagons of roadstone, five days a week from Penmaenmawr, North Wales, to the Essex and Wiltshire areas as well as to Lincolnshire. Under normal conditions this traffic would have gone from Penmaenmawr by coastwise vessels. Traffic in ore and pyrites landed at Garston Docks and forwarded by rail to various destinations since the Armistice: 2,000 tons manganese ore for Stillington; 1,000 tons manganiferous ore for Barrow-in-Furness; 2,600 tons manganese ore for Workington; 1,000 tons of pyrites for Yarmouth; 400 tons ore for Hebburn-on-Tyne. These tonnages, aggregating 7,000 tons, were conveyed

in, approximately, 1,000 railway-owned wagons, representing 29 special trains of 35 wagons each. Other traffic diverted from sea to rail: Tinplates, South Wales to Manchester; cotton goods, Dundee to Manchester; paper, Manchester to Glasgow and London; pit-props, Dolgelley to Patricroft; grain, Scotch stations to Swansea; sugar, Liverpool to Swansea; salt, Runcorn to Glasgow; copper and copper ore, Liverpool to Swansea; cotton-seed, Liverpool to Hull, Dundee and Leith; ironwork, Barrow to Birkenhead; tinplates, South Wales to Liverpool; iron ore, etc., Garston Docks to Birkenhead, Stillington, Workington and Yarmouth; soap, Leeds to Leith and London.

Midland (tons per week): General traffic, to and from London, 1,000; Bristol to Liverpool and Manchester, 2,000; Sheffield to Humber ports, 135; Lancashire to Glasgow, 500; South Wales to London, Liverpool, Hull, etc., 2,300.

North Eastern.—Consignments to Newcastle-on-Tyne; ale from Scotland, 2,700 tons per month; bacon from West Coast ports, large quantities; butter from London, Liverpool and Southampton, 700 tons per month; margarine, from manufacturers, 570 tons per month; meat, from Liverpool, London and Hull, 1,500 tons per month; pig-iron, Middlesbrough to Scotland, 16,600 tons per month; iron bars, Middlesbrough to London, 500 tons per month; pit-wood, Scotland to Middlesbrough, 1,000 tons per month; iron ore, Northampton to Middlesbrough, 5,000 tons per month; pig-iron, Port Clarence to Scotland, 2,300 tons per month; ditto, to destinations in England and Wales, 1,900 tons per month; pig-iron, Loftus to Grangemouth, 4,200 tons per month; galvanised sheets, Stockton to Liverpool, 110 tons per month.

As examples of the differences between water rates and rail rates in May, 1919, the following might be quoted:—

	Water Rates.[1] Per ton.	Rail Rates. Per ton.
Liverpool and Bristol.		
Rice and flour	21*s.* 10*d.* (15-ton lots)	13*s.* 4*d.* (4-ton lots, S to S)
Sugar	23*s.* 9*d.* (10-ton lots)	16*s.* 6*d.* (2-ton lots, del'd)
Groceries, preserves and provisions	24*s.* 9*d.* (2-ton lots)	16*s.* 6*d.* (2-ton lots, del'd)
Liverpool and Swansea.		
Sugar and lubricating oil	25*s.* 2*d.* (2-ton lots)	16*s.* 6*d.* (2-ton lots, del'd)
Liverpool and London.		
Grain and flour (except grain offals)	25*s.* 6*d.* (50-ton lots)	15*s.* 11*d.* (5-ton lots, S to S)
Hemp	35*s.* (any quantity)	19*s.* 11*d.* (5-ton lots, S to S)
Oil cake	26*s.* 8*d.* (any quantity)	18*s.* 2*d.* (5-ton lots, S to S)

Disadvantages and their Remedy.

Much of the diverted traffic carried by the railways was concentrated on a few ports and was being conveyed for what were exceptionally long distances, the combination of these two conditions adding materially to the congestion with which the companies had to deal alike at the ports and on their lines generally. Their position was rendered the more difficult inasmuch as, even in June, 1919, there had been returned to them only a very small proportion of the 31,000 wagons they had provided for use overseas; out of the 20,000 private-owners' wagons

[1] The rates by water are quay to quay and do not include dues at Liverpool.

promised to them they had received scarcely 6,000 ; traders generally—owing, perhaps, mainly to the reduction in the working hours of their staff, a condition which affected them no less than it affected the railways —were detaining wagons under load for longer periods than before, while close on 50 per cent. of the experienced railwaymen were serving with the Forces. Having regard to all these circumstances, it was not possible for the railways to deal with the inflow of imports from overseas at the rate at which these imports were then arriving.

The effect upon the ports was no less marked. In the big ports the ocean-going steamers were deprived of their pre-war facilities in making overside deliveries into coasting vessels ; the length of time they took in discharging their cargoes from one side only on to the already congested quays, instead of operating from both sides simultaneously, was increased by the insufficiency of railway wagons, and the delay in turning round led not only to the blocking of the ports but to a serious curtailment of their own transport efficiency. The smaller ports no longer served their former purpose as local distributing centres ; the difficulties and delays in the distribution of food supplies and materials around the coasts were prejudicial to the well-being of the community ; labour conditions at ports large and small were being disturbed, and there was a risk that if the coasting vessels, with their greatly increased expenses, were left to compete with subsidised railways operating on the basis of pre-war rates, many of those that were still seeking to carry on would regard the position as hopeless and abandon it accordingly.

In the opinion of the Port and Transit Executive Committee—on whose behalf Sir Norman Hill submitted to the War Cabinet several memoranda dealing with the gravity of the situation, which was described as " a deplorable one "—there were three courses open for adoption, namely :—

(*a*) To issue the proposed Order enabling railway companies to refuse to carry goods for carriage by rail where other means for transport exist, subject to such conditions as may be defined by the Order.

(*b*) To raise the railway rates generally, or, in any event, between points that can be served by both the railways and the coasting services so that such rates may at least cover the actual cost of rail carriage.

(*c*) To abandon the idea of freeing imports and to keep the imports at the big ports strictly within the distributing capacity of the railways from those ports.

No doubt could be entertained in regard to the continued gravity of the position, as affecting railways, ports and coasting services alike ; but there were certain difficulties in the way of finding a satisfactory solution to the problem which had arisen.

While, on the merits of the case, there might be abundant reason for the enforcing of a " Refusal of Goods Order," under the powers conferred on the Board of Trade in April, 1918, the question arose as to whether the adoption of this course could be legally justified in June, 1919. Regulation 7 B expressly stated that the Orders made thereunder

by the Board of Trade were to be so made "*with a view to the successful prosecution of the war*"; but, inasmuch as the war was no longer being prosecuted, the doubt might well arise as to whether the Board of Trade would be warranted in making use of Regulation 7 B (*k*) to serve a post-war purpose. Should such course be taken, there was at least a prospect that the legality of the procedure would be challenged. Even if the principle of legality were established, there was the possibility (1) that vigorous protests would be raised by the trading community if they were forced to consign by the more expensive water route instead of by the subsidised railways and were left to pay the difference out of their own pocket, and (2) that the owners of the coasting steamers might take advantage of the situation and raise their freights still higher—a procedure that would doubtless lead to yet another advance in the cost of living. In all these circumstances the Government arrived at a decision averse to the issuing at that period of the "Refusal of Goods Order."

In regard to any such increase in railway rates as might be designed to bring those that affected the coastwise shipping traffic on to a level with the coasting-service freights, thus removing the disparity between them, the consideration arose that it would be impracticable to attempt to increase the rates that were in direct competition with the sea freights if the large number of inland rates based upon them were left unaltered. Many of the latter would also have to be considerably increased in order to ensure the maintenance of the same relative position as before; and, altogether, the work involved would constitute a formidable task, occupying much time and giving rise to many complications. Even, also, when it had been completed, the results might be speedily negatived by fluctuations in the sea freights, to which, of course, there are no statutory limitations as in the case of railway rates.

There was still the question as to whether the said disparity could not be got rid of by means of an increase of railway rates in general, as distinct from those only that related to sea competition.

Here one came to a proposal which, as a means of providing for the increased cost of working the railways under war-time conditions, was first considered by the Railway Executive Committee in June, 1915. It was revived subsequently, from time to time, and in March, 1918, the Executive Committee appointed a sub-committee of Goods Managers and an Accountant to consider and report as to the possibility, in view of the increased expenditure, of justifying an increase in the rates for the conveyance of merchandise and mineral traffic. The sub-committee met and reported, and representations were made to the Board of Trade by the Railway Executive as to the desirability of effecting a general revision of railway rates with a view, not simply to removing the disparity between rail-borne and sea-borne traffic, but to placing the railways as a whole on a self-supporting basis. While, however, the Board of Trade was in full sympathy with this proposal, it was felt that no definite action could be taken pending the creation and organisation of the

projected Department of Ways and Communications, or Ministry of Transport as it was eventually called.

By March, 1919, the financial situation of the railways had become such that the Executive Committee appointed another sub-committee, with Sir Francis Dent, then General Manager of the South Eastern and Chatham Railway, as chairman, to consider whether any general re-arrangement of the bases upon which rates for the conveyance of merchandise and mineral traffic were charged was desirable, and, if so, to recommend the lines upon which such rates should be fixed for the future. Other analogous questions were also remitted to the sub-committee, who, in effect, were thus entrusted with an investigation likely to engage their attention for a year at least, if not for longer still.

So one sees that in June, 1919, a thorough investigation into the question of a general increase of railway rates had already been undertaken; but the position in regard to coastwise shipping was then so urgent that there was need for immediate action, without waiting for the results of a prolonged inquiry, this need applying, not alone to the continued congestion of the ports and the railway lines and to the chronic delay of ocean-going steamers, but to the "parlous state" of the coastwise services. Still left to compete with railway rates maintained by State subsidies at their pre-war level, owners of coasting vessels were steadily abandoning the struggle, the boats were being either sold off or diverted to trade with Continental ports, and there was every prospect that, unless immediate and effective action were taken, the coastwise services would experience a set-back—detrimental no less to the national interests than to their own—from which they would not readily recover.

A Coasting-Traffic Subsidy.

Hence it was that the War Cabinet, at a meeting held on July 4th, 1919, decided, while adopting the principle of compulsory coastwise traffic, to supplement it with an undertaking on the part of the Government to refund the difference between the amount of the sea freight paid and that of the rate which would have been paid had the traffic gone by rail. In this way the various advantages to follow from a diversion of traffic from rail to coasting vessel were to be secured without any reason for complaint on the part of traders who were forced to consign by the more expensive route.

Some weeks were occupied in working out the necessary details to the satisfaction of the various interests concerned; but on August 20th, 1919, the Board of Trade issued a notice to the following effect:—

NOTICE.

COASTING SERVICES.

In consequence of the withdrawal of coastwise steamers a large volume of traffic has been diverted from sea to Rail with the result that the Railways are now burdened with traffic which they have not previously carried. The absence of normal

coastwise shipping facilities is impeding the transport of the food supplies of the Nation, of the raw materials needed in our Mills, Factories and Workshops, and of our manufactures for export, and thereby the cost of living is advanced, the re-establishment of our industries and commerce is retarded, and the difficulties of finding employment are increased.

In these circumstances there is urgent necessity to relieve the Railways of such traffic as can reasonably be carried Coastwise.

The continued application of pre-war rates to the carriage of goods by rail offers strong monetary inducements to traders to use the Railways for all goods including those which can be sent forward as conveniently coastwise, but the unrestricted use of the Railways is interfering with the flow of traffic through the Ports and thereby placing limitations on both Imports and Exports.

There is, therefore, urgent necessity to use to the full the Coastwise Services, but they can only be re-established on a pre-war footing by being assured of a reasonable amount of regular traffic. Full services cannot be maintained if they have to depend on the carriage of casual traffic which is from time to time shut out by the Railways.

To meet these difficulties the War Cabinet have given directions to the Railway Companies that no goods which have been imported foreign, or which are intended for export foreign, shall be carried by rail between points which can be effectively served in whole or part by Coastwise carriage. For this purpose schedules of traffic will be prepared by the Home Trade District Transport Committees in consultation with representatives of the Railway Companies on those Committees, and all goods included in such schedules (whether transhipment goods or otherwise) will be carried, in whole or part, Coastwise, at the Freights and Charges then current, and on the terms and conditions set forth in the Sailing Bill, Conditions of carriage and/or Bill of Lading Form then in common use for other similar cargo carried Coastwise.

The difference between the Freights and Charges so paid (other than demurrage) and the amount of the Railway Rates and charges which would have been payable if the traffic had been carried by Rail will be refunded by the Railway Executive Committee or their Agent to the trader by whom the payment has been made. All applications for refunds must be lodged within three months of date of forwarding of the traffic.

All persons having goods to forward under this arrangement must lodge an application in the prescribed form with the Home Trade District Transport Committee for the District from which the goods will be consigned, and must follow the directions given by that Committee as to the route and means by which the goods are to be forwarded.

Traders will greatly facilitate the prompt carriage of goods by lodging their Application Forms at least ten days before the goods will be ready for shipment.

The District for which Home Trade District Transport Committees have been appointed, and the address of each of such committees to which all communications are to be sent, are given below.[1]

This arrangement is entirely of a temporary nature, and subject to termination at any time.

August 20th, 1919.

This announcement evoked the criticism that it was represented as being " in consequence of the withdrawal of coastwise steamers " that a large volume of traffic had been diverted from sea to rail, with the result that the railways were " overburdened with traffic which they had not previously carried," whereas vessels still on the coasting services were leaving port with their cargo space only partly occupied, or were even abandoning their sailings, because the traders did not feel disposed

[1] The districts given were as stated on page 276.

to pay freights that were anything up to 200 per cent., or even more, in excess of railway rates, which the Government had maintained on their pre-war basis.[1] Then in a memorandum issued by the Port and Transit Executive Committee shortly after the initiation of the new arrangement, it was said :—

> The scheme so far covers only the carriage of goods which have been imported foreign, or which are intended for export foreign. It does not cover the traffic in commodities, such as coal, which are produced and consumed within the United Kingdom. The scheme, if worked with resolution, should afford substantial relief to both the big ports and the railways ; but the general position will not be met until the railway rates are advanced to the point which will cover the actual return on the capital invested in the railways.

As regards the reasons which led to the exclusion of purely domestic traffic from the scheme, it may suffice to say that the foreign import and export traffic was the cause of far greater congestion at the ports than the domestic. The subject of more immediate concern than any possible widening of the application of the scheme was the prospect of an advance in railway rates ; and action was here to be taken in a direction distinct from the inquiry being made by the sub-committee appointed by the Railway Executive, as mentioned above, and superseding, more or less, the procedure of that body.

Increase of Railway Rates.

Under the Ministry of Transport Act, which became law on August 15th, 1919, after Parliamentary debates extending over a period of close on six months, power was given to the Minister of Transport to appoint a Rates Advisory Committee ; and this body was created towards the end of October, 1919. It was understood that one of the most important of the duties to be undertaken by the committee would be that of advising the Minister of Transport as to a general revision of the bases of rates and charges, with a view to putting the railways on a self-supporting basis, and in November the committee were informed that the Minister had determined that an increase in the net revenue of the railways of the United Kingdom from the conveyance of merchandise, animals and carriages by goods train, and of merchandise by passenger train, of not less than £45,000,000 was necessary, the committee being desired to advise as to the best means of obtaining such increase from the different classes of traffic. Early in December a further £5,000,000 was added to the sum mentioned, and the need for urgency in the making of their report was impressed on the committee.

As the outcome of the action thus taken, there was brought into force on January 15th, 1920, an increase in tolls, rates and charges on a gradu-

[1] In *The Times* of August 22nd, 1919, reference was made to an instance in which a steamer that should have proceeded from London to Manchester a few days previously was kept back, the voyage being abandoned, because only 200 tons of cargo were offered, whereas the vessel should have carried six times as much. "In the meantime," it was added, "while the coasting vessels have been neglected, the railways have been overwhelmed with traffic and congestion at the ports has been increased."

ated scale which, with a range of from 25 per cent. to 100 per cent. (plus certain flat rates) worked out at about 50 per cent. on a rough general average.

Additional benefit was derived by the coasting services from this increase in railway rates, and there were still more changes to follow; but before dealing with these we may direct our attention to the further history of the coastwise-subsidy scheme itself.

How the Scheme was Worked.

On each of the Home Trade District Transport Committees referred to on pp. 275–6, there were two railway officers who represented the whole of the railway companies concerned, co-operated with representatives of the local shipping interests, and, with them, kept in touch with everything that went on. It was left to the District Committees (subject to reference to the Central Control Committee, in case of need) to define what was to be considered "imported foreign or intended for export traffic," and one of the first things they did was to draw up schedules of traffic—as dealt with in the ports comprised within their district—which, in their judgment, came within the said definition. It was, however, understood that a broad interpretation should be given to the phrase quoted, so that it would include articles manufactured wholly or mainly from imported raw materials such as, for example, sugar imported raw and refined in this country; flour milled here from imported wheat; cocoa and chocolate; cattle foods, glass, lead, steel bars, tin plates, tobacco, wire, etc. The Bristol District Committee, for example, had a supplementary list of thirty-seven items of this class. Altogether the number of articles included in the schedules generally ranged from about 150 to 200.

Then, also, according to some instructions issued by the Port and Transit Executive Committee, it was not to be the object of the District Committees to compete for traffic which could be carried by the railways to better advantage in the national interests, even although it came within the above definition. The District Committees were to keep fully informed as to the available coasting facilities, and take all such steps as might be possible to increase those facilities so as to enable them to deal promptly and effectively with the traffic offering; they were to put the consignor in touch with the particular shipping company which could deal with the traffic offering; they were to be responsible for seeing that the freights and charges paid did not exceed the current market rates and charges, and they were, also, to receive applications for refunds and certify that the specified conditions had been fulfilled. The fact was also impressed upon them by the Port and Transit Executive Committee that the scheme would tend to attract traffic back permanently to the coasting services, and that every endeavour should be made to re-establish direct relations between those services and the trader.

The course of procedure adopted was as follows: A trader offered

a certain consignment to a railway company. If the goods in question were on the scheduled list, the trader was referred to the secretary of the District Committee, who ascertained whether facilities were available for the transport of the traffic either by sea throughout or partly by sea and partly by rail. If this were not the case, the matter was referred back to the railway company, who were then free to deal with it. When coasting facilities were available, the firm paid the freight charges to the shipping company in the ordinary course of business and, if they thought fit, afterwards lodged a claim with the District Committee for a refund of the difference between the freights and charges paid (exclusive of charges on account of demurrage), and the amount of the railway rates and charges which would have been payable if the traffic had been carried by rail.

A period of three months was allowed to the consignees as that within which claims for refunds could be made. The District Committee certified on the application form—should they find this to be the case—that the sum paid was according to the current freight and charges at the port, and then sent on the form to the railway company concerned in order that they should give the corresponding railway rate. Thus endorsed the form was returned to the District Committee, who certified on it the amount of the refund to which the trader was entitled under the Government subsidy. Then the form was sent to the Accountants Sub-Committee of the Railway Executive Committee to be included among similar claims coming from all parts of the country. Monthly lists of the certified claims were made out by the staff of the Accountants Sub-Committee ; the sum total thereof was communicated to the Treasury ; the Treasury remitted the amount to the Railway Executive Committee, and the Accountants' staff finally forwarded cheques to the respective claimants for the sums to which they were entitled.

From the outline here given of the procedure adopted it may be assumed that the aggregate of the work involved from beginning to finish must have been enormous ; and this was, indeed, the case—the more so as it included, in addition to what has been stated, "sacks" of correspondence.

Mention should also be made of the fact that the cost of working the scheme was infinitesimal compared with the amount of the traffic handled and the aggregate of the refunds paid. Members of the District Committees gave their services gratuitously, and both office accommodation and secretarial staff were loaned either by the shipping interests or by the railway companies. In three instances in which special facilities had to be provided small grants were made ; but the sum total of these was only about £100 per month.

The Subsidy Withdrawn.

On June 17th, 1920, the Ministry of Transport announced that, in view of the improved situation at the ports and on the railways and of

the increases in railway rates then in operation, the coastwise subsidy scheme—which, it was pointed out, had been granted entirely as a temporary measure in order to relieve the congestion at the ports and on the railways—would be discontinued from June 30th, refunds being thenceforward paid to traders in respect only to such traffic as had been received on or before that date by the first carrier concerned. This, as it happened, was a time when the whole subject of State subsidies was being passed under review; and in these circumstances there was, perhaps, a special reason why a scheme which involved a double subsidy, one to the railways and one to the coastwise shipping interests, should come under consideration.

Results Attained.

The sum total of the traffic actually diverted from rail to sea under the operation of the scheme between August 20th, 1919, and June 30th, 1920, was, approximately, 1,326,000 tons. This figure was apart from hundreds of thousands of tons offered for transport by coasting steamers, but for which coastal facilities were not available, the traffic having consequently to be carried by rail.

A further consequence of the operation of the scheme was that coasting services which had been abandoned were re-established, additional tonnage was put on, and many other hundreds of thousands of tons of traffic which did not come directly under the scheme at all were dealt with.

In December, 1919, a maximum of 166,000 tons of traffic for any one month was carried under the scheme. From that time the figures gradually fell to 83,000 tons for the month of March, 1920. The following table shows the position month by month for the full period during which the scheme was in operation:—

COASTAL SUBSIDY SCHEME.

STATEMENT SHOWING TONNAGE FOR WHICH APPLICATION FORMS WERE ACCEPTED FROM INCEPTION OF SCHEME (AUGUST 21ST, 1919) TO TERMINATION, JUNE 30TH, 1920.

Committee.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	Total carried under Scheme.	Total carried, corrected to Oct. 4th, 1920.
London .	10,041	46,233	39,743	49,127	42,950	41,554	36,159	25,892	20,567	21,453	19,617	353,309	353,015
Mersey .	5,668	25,467	47,288	39,797	39,857	30,867	22,748	26,308	18,634	17,726	13,798	288,158	288,158
Bristol .	1,539	26,117	28,356	32,956	44,299	39,388	43,920	39,567	27,482	27,057	67,672	378,355	378,355
Hull .	510	12,448	15,998	16,578	19,289	29,123	19,455	17,886	14,025	8,944	13,897	168,153	168,153
Newcastle	—	1,958	2,432	2,855	8,756	8,102	6,689	9,754	7,467	4,155	5,684	57,852	57,852
Leith .	487	5,097	5,900	8,540	6,709	4,184	5,205	5,744	5,471	3,599	2,611	53,547	53,547
Glasgow.	340	1,236	3,820	4,680	4,843	3,581	1,969	1,456	1,020	931	552	24,428	26,845
Totals.	18,558	118,556	143,537	154,533	166,703	156,799	136,145	126,607	94,656	83,867	123,831	1,323,802	1,325,925

Claims Paid.

One must not assume, however, that refunds were paid in respect to the whole of the 1,326,000 tons carried under the scheme. This total included a certain amount of traffic from Government departments which duly presented claims for refunds only to be told, in effect, that, inasmuch as they were not "traders," no claims made by them could be entertained. Many traders, though ready to consign by sea instead of by rail when they could, refrained from asking for any refund, either from patriotic motives or because of the smallness of the amount which, in their case, might be involved. Claims in respect to, in the aggregate, thousands of tons of traffic diverted from rail to sea subsequent to January 15th, 1920, were rejected because the increase in railway rates which came into force on that date had as regards the consignments in question, wiped out the previous difference in favour of those rates as against the sea freight.

Taking claims paid or passed for payment down to the middle of December, 1920, we get the following totals :—

Number of claims	20,364
Aggregate amount of refunds	£480,000
Weight of consignments covered by claims	684,000 tons
Rail mileage saved by diversion to sea	4,100,000 miles
Ton miles saved	127,000,000

The items showed a great range alike in the weight of the shipments forwarded and in the amounts of the refunds. There were cases in which the grouped claims of individual traders in respect to certain collections of consignments attained a total of £4,000.

In a number of instances the difference on single consignments exceeded £1,000, and in quite a large proportion of the refunds on single items the sum allowed ran into hundreds of pounds. In these circumstances the emphatic preference of the traders for rail transport and their frequent refusal—prior to the initiation of the subsidy system—to consign by coasting steamers even when there might be plenty of space available on them can be readily understood. Evidence was also afforded as to the considerable rail mileage that was often saved, distinct relief being thus assured to the railways under the transport conditions of the day.

These various facts may be illustrated by the following examples; though, inasmuch as the dates on which the traffic was carried are not available, it cannot be stated whether the instances given occurred prior or subsequent to the increase in railway rates on January 15th, 1920 :—

Goods.	From	To	Weight of Consignment.	Rail Mileage Saved.	Sea Freight paid by Trader.	Railway Rate.	Refund.
			Tons.	Miles.	£ s. d.	£ s. d.	£ s. d.
Sawn Karri Timber . .	Hull	Purfleet	848	212	2,055 16 3	914 15 8	1,141 0 7
3,013 Bales of Wool . .	London	Bradford	502	192	1,098 3 7	618 19 6	479 4 1
Steel Plates	Manchester	London	1,017	221	1,694 16 2	1,152 9 4	542 6 10
Galvanised Wire . .	,,	,,	601	,,	1,250 9 2	763 18 6	486 10 8
China Clay	Plymouth	Birkenhead	975	308	1,706 0 0	1,300 0 0	406 0 0

As against substantial refunds such as these there were many that went to the other extreme. Not only was there a considerable number which worked out at less than ten shillings each, and many that did not amount to five shillings, but there were instances in which the difference between the sea freight and charges and the railway rate was no more than fourpence, or even twopence! Here it may be pleaded that such consignments as these may have formed part of a large shipment of goods to different customers and that the trader who paid the sea freight possibly did not know the amount of the railway rate. There were, however, instances in which the refund due did not amount to as much as sixpence on the shipment of a solitary case, barrel or package, and it may be suggested that a trader who paid sea freights and charges ranging from, say, five to seven or ten shillings must have known that the sum could exceed the corresponding railway rate by only a few pence.

The average difference paid per ton where claims had been made and passed down to December, 1920, was 12*s.* 2*d.*

Further Increase in Railway Rates.

In July, 1920, the Rates Advisory Committee received from the Minister of Transport a request that they would advise him as to what increases should be made in the rates, fares, tolls, etc., of the railway companies of the United Kingdom so as to yield by the end of July, 1921, a total deficit on the railways, as from April 1st, 1920, at the rate of £54,500,000 per annum, it being "the declared policy of the Government" that the railways were to be maintained on a self-supporting basis. In the result there was brought into operation, as from September 1st, 1920, a uniform increase (with a few exceptions), plus certain flat rates, of 100 per cent. over the rates for minerals, merchandise and live stock in force on January 14th, 1920, this new increase being substituted for the average 50 per cent. increase imposed from January 15th, 1920.

While the withdrawal of the coastwise subsidy and of the principle of compulsion on which it was based had prejudiced any general diversion of traffic from rail to water, this tendency was to a certain extent checked by the effect of the two successive increase in railway rates in acceler-

ating such transfer when the difference between those rates and the coasting freights was changed in favour of the latter; though it was only under these conditions—and they were limited in their application—that the coastwise interests gained any direct advantage.

On, for example, 105 tons of linseed cake sent from Hull to King's Lynn by water in 1919, the amount paid for sea freight was £75 7*s.* 3*d.*, while the railway rate was £54 13*s.* 9*d.*, a difference of £20 13*s.* 6*d.*, which was made good out of the subsidy. The addition of 50 per cent. to the railway rate in January, 1920, may already have turned the traffic from rail to water; but the 100 per cent. increase, showing a difference of £34 in favour of the coasting service, would certainly have this effect.

In many instances the 100 per cent. increase raised the railway rate to approximately the same level as the coastal freight, placed them on a competitive basis, and left the actual choice of route to be decided by other circumstances and conditions. For a consignment of 116 barrels of rape oil, weighing 24 tons, sent from Hull to Leith in 1919, the sea freight paid was £39 14*s.* 8*d.*, as against a railway rate of £20 8*s.* 1*d.*—a difference of £19 6*s.* 7*d.*; but the increase of the railway rate, by 100 per cent., to £40 16*s.* 2*d.* would show a difference of only £1 1*s.* 6*d.* in favour of the water, and the rail transport might still be preferred.

As against, however, the traffic coming under either of these two categories, there was that in regard to which the difference against the coastal freight had exceeded 100 per cent., and might be anything up to 300 per cent. In all such cases as these—and there were very many of them—the position was likely to be unaffected by the further increase in the railway rate. A good example is afforded by a consignment of 100 tons of rape-seed meal sent from Hull to Liverpool prior to January 15th, 1920. The sea journey involved a voyage from one side of England to the other and the freight and charges came to £202 18*s.* 4*d.*, as against a rate of £65 for transport across country—a distance of 122 miles—by rail, the trader thus being entitled, under the subsidy, to a refund of £137 18*s.* 4*d.* The increase of 100 per cent. from September 1st, 1920, would still leave a difference of £72 18*s.* 4*d.* in favour of the railway rate; and by the railway the traffic would, assuredly, continue to go.

It may have been as the result of considerations such as these that the Rates Advisory Committee were led to say in the report to the Minister of Transport in which they advised the general increase of 100 per cent. as a means of covering the expected deficit on the railways:—

> Upon the question whether when the railway rates have been increased by the general percentage here recommended the coastwise steamers will be able to attract a fair share of traffic at freights which will enable them to continue to compete, we have come to the conclusion upon the evidence that, with few exceptions, they will not be able to do so.
>
> We are, therefore, of opinion that it is desirable with a view to securing the continuance of the coasting trade that if rates can be shown to have been reduced to meet water competition they should be restored to a normal amount, but we regret that we cannot see in what manner this can be done at the present moment.

This brings us to that question as to the relationship between exceptional rates and coastwise traffic to be subsequently dealt with by the Rates Advisory Committee as part of their revision of railway rates in general; and here, so far as the present work is concerned, the subject must be left.

CHAPTER XXIV.

TRAFFIC CONTROL AND REGULATION.

As early in the war as November, 1914, some of the railway companies began to complain of a wagon shortage which they attributed, not to any actual deficiency, at that time, in the supply of rolling stock, but to the keeping of a large number of wagons under load either by the naval and military authorities or by their contractors, with the result that these wagons were practically withdrawn from the railway service until such time as they might be cleared and rendered once more available for transport purposes. In other words, it was then a case less of wagon shortage than of wagon misusage, and a sudden doubling of the number of wagons—could this result have been achieved by the waving of some magician's wand—would have been of little permanent advantage, as regards any practical increase of traffic facilities, if the additional stock had, in turn, been detained under load, whether as "warehouses on wheels" or otherwise.

This one serious disadvantage (to which, as a matter of fact, traders in general were also contributing) led to another, since the undue detention of loaded wagons on the railway lines or on the railway sidings tended to produce a state of congestion which, although apparently only local, might involve the holding back, at junctions or elsewhere, of a considerable amount of traffic over a long stretch of line until such clearance had been effected as would permit of this traffic getting through to destination.

So it was that the conditions experienced in November, 1914, became the first of a long series of traffic difficulties which, assuming various forms and contributed to by many causes, were eventually to be met, and more or less overcome, by a well-devised system of traffic control and regulation.

The initial step in the direction of this reform was taken when, as the result of a communication from the Railway Executive Committee, the War Office sent telegraphic instructions to the Officers Commanding-in-Chief of the various Commands informing them that serious congestion and shortage of rolling stock was being caused by military traffic, and that immediate steps must be taken to ensure the unloading of all trucks, and the removal of their contents from station premises, within a few hours of their arrival. Later experiences showed, however, that telegraphed instructions were, in themselves, inadequate to check the evil. The War Office also asked the Executive Committee that it should be supplied

with a daily return giving particulars of any wagons consigned to War Office Departments or contractors which were kept under load for more than twenty-four hours. These particulars were duly furnished. The Executive Committee further arranged to have a census taken of the wagons under load with War Office or Admiralty traffic on Sunday, November 15th, 1914. The numbers shown for the whole of the railways in Great Britain were—railway-owned wagons, 12,339; private owners' wagons, 9,025; total, 21,364.

Congestion Sub-Committees.

A few weeks later complaints were received—this time through the Board of Trade—of delays in the working of the coal traffic, and more especially the traffic for some of the Electric Light Companies. Thereupon the Railway Executive appointed (December 15th, 1914) a sub-committee of the Superintendents of nine leading lines, with instructions that either they or their representatives should meet daily at 10 a.m., under the chairmanship of a member of the Executive Committee, in order to expedite the working generally and to ease the situation brought about by the heavy accumulation of traffic at the principal exchange sidings. The duties of this sub-committee were to be (1) to collect daily information as to the requirements of each company and the difficulties arising or likely to arise at any point; (2) to take immediate steps to deal with, or to prevent, such difficulties, either by lending stock or engine-power or by allocating to other companies the work of shunting, or sorting, the traffic of any company working under difficulties; (3) to minimise the chances of congestion by diverting traffics from ordinary routes to routes possibly longer but more free from difficulty; (4) to recommend the provision, where necessary, of emergency works for the purpose of affording additional outlets for traffic, and (5) to curtail redundant passenger facilities with a view to giving greater accommodation to goods traffic.

Unfortunately the congestion more especially due to the diversion to the railways of so much coasting traffic became still more serious, and on some of the lines this congestion was, by the beginning of February, 1915, developing into an acute stage.

The Executive Committee thereupon appointed a sub-committee of General Managers, Superintendents and Goods Managers to which a somewhat long list of traffic questions was referred. The committee met for the first time on February 3rd, 1915, under the presidency of Sir Guy Granet, then General Manager of the Midland.

Among the questions to be considered were the following: "What is the total of the large number of exceptional rates which have been quoted, and what amount of traffic is flowing under them? To what extent is this new traffic to the railways, and how far would the situation be met by cancelling the rates?"

To this it was replied that the number of war-time exceptional rates

conceded was thirty, applying between 493 stations, though all had not been accepted by the traders, the number in actual operation being nineteen, applying between 355 stations. Excluding pit-props, the total amount of traffic carried at these rates down to the end of January had been about 122,000 tons. This was almost exclusively new traffic. The sub-committee were not of opinion, however, that the exceptional rates granted owing to war conditions had prejudiced the working of the railways in general, while the railway companies, it was said, had been assured that, but for the granting of these rates, many works would inevitably have been compelled to close down. In the circumstances it was not thought expedient, at that time, to cancel the rates.

Another question put to the sub-committee was the extent to which coal previously sea-borne was then being carried by rail, and whether or not the railways could refuse to convey coal of this description. Statistics presented showed that since August, 1914, the railways had carried per month an average of about 126,000 tons of coal which, before the war, had gone by sea. There would, it was felt, be difficulty in discriminating between coal formerly sea-borne and coal that had hitherto always gone by rail, while there was the risk that, unless some guarantee as to ships being available could be given, refusal to carry coal for factories, works or premises regularly supplied by water under normal conditions would endanger the closing down of a number of gas and electric-lighting concerns and, also, various establishments engaged on important Government work.

While the sub-committee could not apply remedies in either of these directions, it was arranged that, in order to relieve a state of severe congestion on the London and South Western, causing a block which extended back to the northern lines, five other companies should clear off the accumulated empties by taking them away "in the rough" and marshalling them elsewhere according to their ownership or ultimate destination. At a further meeting, held a week later, it was reported that between 6 a.m. on February 4th and 6 p.m. on February 9th, the South Western had thus been relieved of 8,325 empties and had "accepted" 8,049 loaded wagons from other companies whose own lines, in turn, were cleared proportionately by this reopening to them of their southern outlet.

An additional service rendered by the sub-committee in regard to the goods traffic of the country in general was that of planning alternative routes for traffic which could not be conveyed by direct routes without the risks of delay and further congestion. Other expedients, also, were adopted.

Use of Special Labels.

While the sub-committees here in question were thus actively employed, the need had arisen for affording to station-masters and railway agents throughout the country some better means than then existed for regulating the flow of naval and military traffic. That this traffic

should take precedence over ordinary civil traffic was, of course, quite understood; but, apart from the fact that each was greatly increasing in volume, there were in regard to Government traffic varying degrees of urgency not met either by the general principle of preferential treatment or by the arrangements then in force. There had, also, been much abuse in the employment of special labels by firms purporting to be doing work on Government behalf, whilst the military authorities had received from consignors complaints of delays in the acceptance or transit of traffic by the railway companies.

As the result of consultations between the Railway Executive Committee and the departments concerned, a revised scheme came into force in February, 1915. Under it, all military and naval traffic was divided into three classes—(I) Very urgent, (II) urgent, and (III) ordinary.

Any very urgent traffic (Class I), either from the naval or military authorities or from a firm doing Government work, was still to be dealt with through the Railway Executive Committee in London (which would advise the railway companies concerned), in order that it should be accorded special priority of transit over all other traffic whatsoever.

Traffic in Class II was to be forwarded with a consignment declaration (Form A) furnished by the Government department so as to ensure

FORM A.

This Declaration, if pasted to the Consignment Note, will give traffic so consigned priority of acceptance over ordinary Military traffic.

Not valid after_____

URGENT.

For {NAVAL. / MILITARY Service.}

Particulars to be filled in as far as possible by issuing Department and completed by the consignor.

Consignor_____

Dispatching Station_____

Consignee_____

Station_____

Description of Goods_____

All wagons containing traffic consigned under this form must be labelled with the special label No. 1.

SPECIMEN OF DECLARATION (FORM A).
(Printed on orange-coloured paper.)

for it priority over ordinary naval and military traffic.

In Class III there were to be two divisions: Class III (*a*), ordinary naval and military traffic, entitled to priority of acceptance over ordinary civil traffic; and Class III (*b*), traffic sent by one firm engaged on Government work to another to which a like priority was

to be accorded on the production of a certificate (Form B) from the Government department concerned.

CERTIFICATE FORM B.

CLASS III (*b*).

Department_____

Date_____

This certificate ceases to apply one month after the above date.

To the Railway Companies concerned.

This is to certify that the goods mentioned below are due to be dispatched by rail in connection with the execution of :—

NAVAL
MILITARY Contracts, and should be given priority over civil traffic, in accordance with para. 22, " Instructions to General Managers."

Name of Consignor_____

Dispatching Station _____

Name of Consignee_____

Destination Station _____

Description of Goods_____

Approximate quantity per week_____

This Certificate does not entitle the goods to be carried at Government expense.

Officer Authorising the Contract.

All wagons containing traffic consigned under this form must be labelled with the special label No. 2.

SPECIMEN OF DECLARATION (FORM B).
(Printed on white paper.)

The special labels to be used were as under, over-printed " 1 " or " 2 " in red ink, in prominent figures, according to the certificate with which they were to be used :—

Date_____

From _____

To_____

Owner and No. of Wagon _____

Owner and No. of Sheet _____

Owner and No. of Under Sheet_____

Consignee_____

An amplification of this particular system followed in August, 1915, when it was desired that priority over ordinary traders' traffic should be given to the large quantities of materials forwarded from many

different parts of the country for the building and equipment of munition factories. Experience was also showing the need of further measures for checking the local congestion to which such building had already led.

It was now arranged, in regard to traffic for certain specified munition factories, that, in place of the certificates provided for under the existing scheme, the consignor should hand in at the forwarding station special truck labels obtained in advance from the responsible Government officer, signed by him, and bearing name of destination station and the dates between which, alone, the labels would be valid. Each label was to have on its face the letters " E.D." printed in bold type in a distinguishing colour; the labels themselves were to be of different colours according to destination, and two labels—one for each side—were to be given to the railway company for every wagon required. The supply of the labels was to remain in the hands of the Government departments, which would issue them to consignors as occasion required. If those furnished were not used within the limits of the dates specified, fresh ones would have to be obtained.

The adoption of these " E.D." labels eventually became a powerful means in exercising control over the quantities of traffic offered at sending stations for particular destinations and in avoiding congestion thereat. In the case, for example, of one large munition works where it was especially desired to avoid any blocking of the lines during the Christmas of 1915, two series of labels were issued—one series available only to December 21st, and the other series not available until December 27th. A month later, with the object of making the system of control still more effective, orders were given that thenceforward no traffic whatever should be forwarded to specified munition works unless the special " E.D." labels were attached to the wagons.

Then, in order to assist in the regulation of traffic for Woolwich, it was arranged that contractors consigning traffic there on Government account should be supplied by the Ministry of Munitions with distinctive labels which, marked " W.A." " W.D." or " W.Y." in red, would indicate at a glance whether the traffic was intended for the Arsenal, the Dockyard or the Station Yard respectively. In the same way the labels on wagons for Richborough were over-printed " W." in red, when consigned to Richborough Wharf, and " Y." also in red, when going to Richborough Stores Yard.

Goods Congestion in London.

Reverting to the appointment by the Railway Executive Committee of sub-committees charged with the task of dealing with questions of traffic congestion, the fact should be further recorded that at the end of March, 1915, attention was called to the congested condition of certain goods termini in London and the consequent blocking back of traffic other than the Government stores and the perishables to which prefer-

ential treatment was being given. There was, also, the prospect of a further heavy increase in traffic when the various Ordnance factories, etc., got into full working order. The Goods Managers and Superintendents of six of the leading London companies were accordingly asked to meet, under the presidency of a member of the Railway Executive Committee, in order to consider what steps should be taken.

This course was duly adopted, and the proposed meeting was held on April 12th, 1915. It was then reported that all the London main-line companies were being called on to carry an increasing tonnage of traffic to London. The increase was generally attributable to the continued diversion to the railways of traffic normally sea-borne, though in the case of some companies there had, also,—owing to restrictions it had been found necessary to impose—been a diversion to their lines of traffic which had previously gone by other railway routes. In either case the additional traffic had to be dealt with by a staff not only depleted but made up, to a certain extent, of men less efficient than those who had left to join the Colours. These disadvantages were being experienced in regard alike to the handling in the terminal depôts and to the cartage work performed.

Some of the London companies were reported to have adopted the expedient of restricting the number of wagons brought forward to any one terminus day by day to the maximum number which could be dealt with there in the course of a day; and the experience so far obtained showed that the system thus adopted had led to good results. The Goods Managers and Superintendents accordingly decided to recommend that it should be put into operation by the London companies generally.

The recommendation was at once acted upon, and three weeks later the Goods Managers and Superintendents met again, to learn the result. In the interval the volume of traffic at the London termini had undergone a further increase, estimated in the case of the London and North Western at 29 per cent., and in that of the Great Northern at 48 per cent. The traffic included a large tonnage of goods passing through London, but only a very small proportion of this tonnage was Government traffic.

Notwithstanding the increase, the system of regulation adopted was said to have yielded the best possible results, and it was not thought necessary that any further change should then be made in the working of the traffic.

The Ministry of Munitions.

With the creation in June, 1915, of the Ministry of Munitions, there had arisen the certainty of an eventually enormous expansion in the transport demands to be made on the railway companies, and an even greater need was thus developed for ensuring the most efficient user of rolling and other railway stock.

The earliest call for increased transport on account of the Ministry of Munitions came with the demand for building materials for new

factories, the erection of which—in some instances on a very substantial scale—in various parts of the country, was pushed on with the utmost vigour ; while, when the factories were ready, the transport, first of great quantities of raw materials for munitions, and then of the manufactured munitions themselves, followed at the earliest possible moment. If, therefore, every available man was wanted at the front, it was no less necessary that every available railway wagon should be made the best possible use of at the primary bases of supply at home.

Reference has already been made to the issue of special labels for traffic forwarded to certain of the munition factories. A further question that arose was the ensuring of a sufficient supply of wagons for munitions traffic of all kinds ; and it was for the attainment of this end that action was now to be taken in various directions.

Inquiries by Clearing House Inspectors.

Notwithstanding the representations made in November, 1914, as to delays by the naval and military authorities in the unloading of railway wagons, and notwithstanding the action taken thereon by the War Office, the evils of undue detention of wagons employed on Government traffic were still so serious that, following on the creation of the Ministry of Munitions and the prospects thus foreshadowed, the services of a number of Inspectors attached to the Railway Clearing House were secured, and various local "conferences" were utilised, in June, 1915, for the purpose of obtaining definite facts as to the detention or misuse of railway wagons or of railway-wagon sheets at Government depôts, camp centres and Ordnance works. Permits authorising the Inspectors to visit these places for the said purpose were obtained for them by the Executive Committee. The course thus adopted gave such good results that in July, 1915, a further group of Inspectors was entrusted with the duty of visiting railway stations, railway sidings and places other than camps, Government depôts, etc., in order that these, also, should be included in the reports made. To each of the Inspectors a certain district in England, Wales or Scotland was allotted.

Traders and Demurrage.

Undue detention of railway wagons was, however, no less due to manufacturers and traders in general than to Government departments and Government contractors.

The free period allowed to a trader for unloading a railway wagon, when he undertook to perform this service for himself, was forty-eight hours, exclusive of the day of arrival. Liability to demurrage charges, fixed according to the capacity of the wagons, began at the end of this free period if the work of unloading should not have been carried out by then.

In many instances traders were known to prefer to pay the penalties, and to keep the wagons under load until they actually wanted the con-

tents, rather than unload at once, this being more especially done when those traders were short both of labour and of storage accommodation. There was, also, a tendency, when delays in traffic were occurring through congestion on the lines, for traders to order supplies in excess of immediate requirements, so that they could ensure having a reserve under load; though in this way the state of congestion was intensified, and the possibilities of a wagon shortage were increased. Any personal advantage gained by the one trader was, in fact, only secured at the expense of others, a vicious circle being established which was bad all round.

Under war-time conditions the holding-up—from whatever cause—of wagons containing traders' consignments soon attained such proportions that on one of the leading lines the demurrage charges incurred by the public during November and December, 1914, increased by 160 per cent.

In March, 1915, the Railway Executive Committee inquired from the sub-committee of Goods Managers if the demurrage charges were being properly enforced against defaulting traders with a view to getting an earlier release of wagons, and the answer given was that the charges were being pressed in all instances. Not only, however, did a large proportion of the charges remain unpaid, but the detention of wagons by traders and the congestion of traffic resulting therefrom were found to be steadily passing from bad to worse. So the need for drastic action, especially in view of the prospective traffic demands of the Ministry of Munitions, became more and more apparent.

In October, 1915, there was drawn up a list showing the demurrage charges which had accumulated, mainly since August, 1914, against (*a*) armament firms, (*b*) traders directly engaged on Government work and (*c*) general traders. It was found that, apart from many smaller sums, the penalties incurred by individual firms, and still unpaid, included such sums as £500, £630, £710, £806, £1,994, £2,562 and £2,667. In the last-mentioned instance the amount outstanding increased to £6,000 before a settlement was reached. Inasmuch as the demurrage charges ranged from 1*s.* 6*d.* per day per ordinary wagon to 10*s.* per day per wagon of thirty tons and over, it will be seen that the number of days' detention of the wagons must have attained to very considerable proportions indeed.

The list in question was duly presented to the Railway Executive Committee, which directed that legal proceedings for the recovery of the penalties should be taken in every instance where payment was refused.

Strong protests were made by many of the firms on an intimation to this effect being given to them. It was pleaded, among other things, that the undue detention was attributable to one or more of such causes as shortage of labour, lack of warehouse accommodation, delay in the construction of private sidings, the commandeering of horses and vehicles by the military authorities, the receipt of urgent requests from the Government that "supplies were to be ordered forward from all points without restriction," and war conditions in general. To such representa-

tions as these the reply was made that it would be quite impossible for the traffic requirements of the Government to be met, and for the trade of the country to be carried on efficiently, unless traders were to co-operate in the efforts being made by the railway companies by releasing wagons and sheets without delay. "The difficulty the railway companies have experienced in providing sufficient wagons has," it was declared, "been largely brought about by traders failing to release the stock promptly, and in all cases where wagons are not released within the free period the demurrage regulations must be strictly maintained." As regards specific pleas that "stress of circumstances," of one kind or another, had prevented the traders from unloading the wagons promptly, the answer given in various instances ran :—

> The arguments advanced in your letter clearly indicate to the minds of the railway companies that traffic was sent forward without any apparent attempt to regulate the supplies, and without proper consideration as to the urgency of discharging the wagons. The railway companies cannot, therefore, see their way to set aside the regulations under which the charges in question are properly due.

In the words "traffic was sent forward without any apparent attempt to regulate the supplies" was to be found one of the main reasons for the congestion, the detention and the wagon shortage that arose.

Traders whose businesses may have suddenly assumed abnormal proportions under war-time conditions ordered forward supplies without regard for the limitations either of their powers of production or of their storage capacity ; and it would, no doubt, have been a great convenience to them if they had been allowed, free of charge, to retain the loaded wagons for an indefinite period as extemporised warehouses, not to be cleared until it quite suited them to make use of the contents, whatever the degree of inconvenience which the keeping back of the wagons might cause to other traders or in other directions.

The lesson it was thus desired to enforce on the firms in question was that, by arrangement with the senders, they should so regulate the forwarding of supplies that they would not be likely to receive more at any one time than they could unload without delay, thus releasing the wagons for further service. It was, in fact, this principle of regulation which became the main factor of the traffic situation ; and in the case of traders, as distinct from Government departments not amenable to penalties, the most effective way of enforcing it was found in insistence upon payment of the demurrage charges.

Committee of Superintendents.

As a further means of relieving traffic conditions which threatened to become still more acute, the Railway Executive Committee decided at the end of September, 1915, that during the ensuing autumn and winter the Superintendents of lines represented on the committee should meet at the Railway Clearing House every Tuesday in order to discuss any traffic difficulties which had been experienced during the previous

week; to deal with questions of exceptional traffic that might arise, and to adopt all practicable measures for reducing, if not preventing, congestion of the railway lines. The Superintendents forming this committee were to have power to call in the Superintendents of other lines, together with Goods Managers and Mineral Managers in general, to attend any meeting at which the help of these other officers might be of service. The minutes of each meeting were to be submitted to the Railway Executive Committee on the following day.

The Superintendents entrusted with the said duties did a great deal of very useful work. They succeeded, among other things, in so regulating the heavy and previously irregular flow of Admiralty coal that certain difficulties in working which had arisen were overcome. They arranged for the return to the northern lines of "rough" empties waiting on the London and South Western, where trouble on this account was still being experienced. They paid a visit to Carlisle, an accumulation of 560 loaded wagons at some newly-erected munition works in Scotland, with a further 800 awaiting a chance of getting there, having produced much congestion. This the Superintendents, finding that not more than seventy wagons could be unloaded in a day, proceeded to get rid of by putting a stop on all further traffic to the works until a clearance had been effected, a scheme for the future regulation of the traffic being, also, arranged with the Ministry of Munitions. The same active committee found alternative routes for urgent traffic which could not pass by direct routes; made representations to traders as to the forwarding of traffic under such conditions as would reduce the risk of congestion; secured the running of additional through goods trains, and dealt with traffic congestion in general in any part of England, Wales or Scotland where it was found to exist. The meetings, held at first weekly and then at longer intervals, as required, were continued until the end of May, 1916.

Wool Traffic and Port Congestion.

The attempts which, as we have seen, were made by the railway companies to regulate the flow of traffic over their lines according to the capacity of the receivers to deal with it on arrival were, indirectly, among the causes of that port congestion as to which so much was to be heard, and more especially in connection with the wool trade and the Port of London.

A greater burden had been imposed on the railways in respect to this trade because of the curtailment of sea-route facilities for the conveyance of wool to east-coast ports, among the results thereof being more cartage and handling in London, and a much longer rail haulage. In 1913 the number of bales of wool received at Bradford from Humber ports was 311,000; in 1914 it fell to 286,000, and in 1915 it was only 104,000—a decrease of 207,000 in 1915 as compared with 1913. Meanwhile the number of bales forwarded from London to all inland destina-

tions rose from 408,000 in 1913 to 528,000 in 1914, and 1,439,000 in 1915—an increase of 1,032,000 in 1915 over 1913; while the number of bales received at Bradford by all routes was 898,000 in 1913, 857,000 in 1914, and 1,430,000 in 1915, an increase of 532,000 in two years.

In addition, therefore, to the longer haul and the increased labour, falling on the railways, Bradford required to provide for an abnormal quantity of wool, the more so as the amount exported had diminished considerably. Under pre-war conditions, the wool received there in excess of immediate requirements would have been stored in the large railway warehouses provided for that purpose, and in May, 1916, there were still in these warehouses thousands of bales, some of which had been there for periods of up to eighteen months. It was not suggested that the warehouses were full.[1] There was, in fact, room in them for another 70,000 bales. Storage, however, involved a double handling, and, with staffs depleted by enlistments, the railway companies decided that they could not provide the necessary labour for warehousing in addition to transport, and would have to leave the traders, to a large extent, to make their own arrangements for dealing with the wool; though the traders, in turn, had their difficulties on account both of their own shortage of labour and the comparatively limited extent of their own storage accommodation, the factories being, in some instances, already full of supplies.

Faced by these conditions, the railway companies, who already had a good deal of wool held up on their sidings, waiting to be placed in the station yards, concluded that, if they accepted larger quantities in London, the only result would be that a still greater number of urgently needed trucks would be kept under load on valuable siding space, itself no less required for other important purposes, while no larger quantity of wool would be likely to get into the hands of the consignees. Hence the action taken to regulate the acceptance of wool in London for consignment according to the quantities already held under load at the receiving stations and the rate at which the consignees could take delivery.

As an alternative measure some of the companies provided motor lorries at the Bradford depôts for conveyance of the bales direct to traders who could receive them without having to rely on railway warehousing and this arrangement relieved the situation to a certain extent.

All these various matters, dealt with in communications from Government departments or the Port and Transit Executive Committee (appointed by the Prime Minister, November, 1915), and in exhaustive reports by the Goods Manager, were duly considered and decided upon by the Railway Executive Committee, which, while anxious to assist in any practicable way in the relief of congestion in the Port of London, nevertheless held the view that the principle of regulation adopted in regard to the wool traffic was abundantly warranted by the circum-

[1] The warehouse accommodation provided at Bradford by the railway companies for all classes of wool was as follows: Great Northern, Adolphus Street, 20,000 bales, and City Road, 30,000; Lancashire and Yorkshire, 46,000; Midland, 30,000; total, 126,000 bales.

stances of the position, pending the making of other arrangements at the receiving end.

Military Help in Cartage.

The troubles experienced in the autumn and early winter of 1915 in connection with the cartage of certain traffics to and from docks, railway termini and military depôts in the London area led the Executive Committee to approach the War Office with a view to seeing whether the assistance of the military could not be obtained in this direction.

Not only was there a dearth of cartage facilities and a depletion of cartage staff affecting the railway companies and leaving, it was said, the cartage-contractors in an even worse plight, but the difficulties at the railway termini were increased by the inexperience of the substitutes for the goods-men who had left the railway service to join the Colours. It was represented, also, that the demands which had to be met in effecting the cartage of Government supplies were causing a delay of, in a large number of instances, from a month to six weeks in the distribution of food-stuffs from the Port of London ; and it was suggested that if the War Office and the Admiralty could be induced to cart all their own traffic to and from the railway depôts, the railway teams would be in a better position to deal with perishable and non-military traffic.

Proposals made to the War Office on these lines received sympathetic consideration, and it was eventually arranged, in February, 1916, that sixty military motor wagons should be allocated to the use of the railways in London for the road transport of military traffic. The wagons were to be apportioned among the companies day by day according to the requisitions made, and a central office, under the joint charge of a military officer and a member of the staff of the South Eastern and Chatham Railway, was to be set up at the Bricklayers' Arms Goods Depôt of that company as a convenient point from which the vehicles could be distributed. A railway employé was to accompany each lorry in order to effect delivery. Contractors' traffic carried under this arrangement was to pay charges as fixed by Collection and Delivery rates. The whole unit of Military Mechanical Transport detailed for the work was to be accommodated at the Bricklayers' Arms Depôt.

After a few weeks' experience of this new arrangement, it was reported that the work done by the sixty military motors had been of considerable service to the railway companies and that, thanks to the assistance thus rendered, horse-drawn vehicles had been released for the ordinary commercial business of the goods depôts and utilised in the conveyance of food-stuffs and other commodities. In June, 1916, the railway companies had to intimate that, owing to the further depletion of their staffs, it was impossible for them to provide a railway employé to accompany each of the lorries in order to assist in the loading and unloading. Thereupon the War Office further undertook to supply men for this purpose so far as military traffic was concerned.

Detention and Misuse.

While the Railway Executive Committee had been occupied in endeavouring to solve these and other traffic problems, the Railway Clearing House Inspectors continued to send in their weekly reports giving specific cases of detention or misuse of railway wagons, railway sheets, etc., either at military and naval depôts, arsenals, docks, harbours, explosives factories and controlled establishments, or at railway companies' stations and sidings. Cases of apparently needless journeys in connection with Government traffic, and other matters, were also dealt with. The reports were made, at this time, to the sub-committee of Goods Managers, which, at a meeting held on October 15th, 1915, decided that a detailed statement, based on the reports of the Inspectors, should be prepared with a view to arrangements being made, through the Executive Committee, for a meeting on the subject with the Government authorities.

The detailed statement was submitted to and considered by the Goods Managers at their next meeting, on October 28th, and a report thereon was made by them to the Executive Committee. In this report it was stated that undue detention of railway stock at Government depôts, camps, military sidings, etc., was accentuating the difficulties experienced by the railway companies in making provision for the increasing traffic requirements alike of the Government and of traders in general, while, apart from the delay occurring after the stock had been handed over to the military or naval authorities, the consequent congestion at the Government depôts and camps or at sidings which served them led to considerable detentions at points short of destination. The report continued :—

> The Goods Managers are of opinion that so long as the Government authorities at the various dockyards, depôts, camp centres, etc., order forward supplies for which it must be realised the storage accommodation available is inadequate, detention will not be removed ; and they suggest that strong representations be made with a view to a better system of control being exercised at all places where large quantities of Government stores are accumulated.

If the Government authorities should be unable to organise an improved system of regulation of their traffic they might, it was suggested, arrange for better storage accommodation, so that there would be less reason for keeping the wagons under load.

The examples recorded of apparently needless journeys and handling were, in the opinion of the Goods Managers, the result of the system under which the great bulk of Government supplies passed through an intermediate depôt, presumably for the purpose of checking prior to distribution ; and it was suggested that this procedure might be modified by a system of dispatch direct from the original senders to destination. There had been difficulties, also, through the indiscriminate loading of gunpowder and other special vehicles at Woolwich Arsenal, where this work was entirely in the hands of the Government authorities

and beyond the control of the South Eastern and Chatham Railway Company.

Then, again, Government traffic which might have been sent direct by sea from one port to another had been put on the rail, as, for instance, 400 wagons of hay, from Grangemouth to Cardiff; 100 wagons of cotton, Sharpness to Liverpool, and 400 wagons of barbed wire, Plymouth (Millbay) to the Royal Victoria and Albert Docks, London. Here it was suggested that closer attention should be given by the authorities to all cases in which the water route could be used as a means of direct communication.

Having regard alike to facts such as these and to the importance of the whole subject, the Goods Managers thought there was an urgent necessity for an early meeting with representatives of the Government departments affected in order that the whole matter could be discussed and such measures adopted as circumstances should permit.

Typical Instances.

The long series of typical instances given as an appendix to the report in question, or coming to hand from other sources, proved that the Goods Managers were abundantly warranted alike in their representations and in their recommendation.

Thus, in regard to undue detentions, it was shown that on June 30th, 1915, there were, at Parkeston Quay, still under load with Government traffic, fifty-four railway wagons of which twenty-four had been placed at the disposal of the authorities as far back as August and September, 1914. (Pressure brought to bear on the Admiralty officials through the Railway Executive Committee had, by October 15th, 1915, resulted in the gradual clearance of all but eight of the wagons; though of these eight there were two which had then been standing under load since August 15th, 1914, and November 12th, 1914, respectively.)

At Grimsby docks three wagons of ammunition received on November 4th, 1914, and two others received on December 7th, 1914, were not cleared by the authorities until August 30th, 1915. A number of other wagons, containing Government stores, had been under load at Grimsby for from forty to 100 days.

Out of twenty-eight wagons with Government traffic at seven different military camps, military depôts, or docks, fourteen had been under load between twelve and twenty days; six for between twenty-one and thirty days; two for between fifty-five and sixty days; five for between sixty-two and sixty-seven days; and one for seventy-three days. Some railway wagons laden with straw were not unloaded until they had been standing for from fifty-five to seventy days.

At Woolwich Royal Arsenal and Dockyard the Railway Clearing House Inspectors found, between August 16th and September 10th, 1915, no fewer than 789 wagons under load. Of these 105 had been standing for periods in excess of seven days. In addition to this, 214 railway wagons

were being used by the Arsenal authorities for loading between the different sheds.

Of many cases reported in which apparently needless journeys had been performed in connection with Government traffic one example came from Reading Central Station, where during the period from the 1st to the 18th of September, 1915, inclusive, there were received for the military authorities 1,222 wagons of oats and maize, of which 1,077 were sent on thence unchecked to other destinations.

At the Willow Walk goods station of the London, Brighton and South Coast Railway, situate in Bermondsey, S.E., there were being received daily, in the autumn of 1915, about 1,000 wagons of military traffic which, dispatched from all parts of the country, were handed over to the Brighton Company at junctions on the outskirts of London, and conveyed along a very busy piece of line to Willow Walk in order that their contents could be checked and inspected by the military officer responsible for them. This done, the traffic was worked back again and sent on to Newhaven.

Between June 14th and July 13th, 1915, there were received at York, the depôt of the Northern Command, seventy-three wagon loads of military stores which, after being inspected, were forwarded to other destinations, these, in a number of instances, being in the direction of the original point of dispatch. Between October 1st and 19th, 1915, a further sixty-two wagons were received and dealt with in the same way.

Another example of what this inspection system involved in the way of rail haulage was afforded in January and February, 1915, in the case of some general-service wagons constructed for the War Office by the London and South Western Railway Company in their wagon works at Eastleigh, near Southampton. From Eastleigh the wagons, when ready, were first sent to Deptford—for inspection—and then were forwarded from Deptford to Hastings, Bisley Camp (L. & S.W.), Lancing or Bournemouth (L. & S.W.).

In the opposite direction military carts went from various parts of the country to Portsmouth for inspection and re-distribution. Much military traffic was dispatched, also, from the north of England and elsewhere to Park Royal, on the western outskirts of London, for inspection, and was then either returned to the north or forwarded to Ireland.

A Joint Standing Committee.

Without waiting for the detailed report of the Goods Managers, the Acting-Chairman of the Railway Executive Committee sent to the War Office, the Admiralty and the Ministry of Munitions a letter, under date October 24th, 1915, in which he said :—

> The railway companies are certain to experience considerable difficulty in finding all the wagons that will be required during the coming winter and spring in order to meet the requirements, not only of the general trade of the country,

but of the vast increase that is likely to take place in traffic requisite for the manufacture of munitions of war.

It is essential, therefore, that special steps should be taken to ensure the prompt release of wagons consigned to military and naval depôts, arsenals, explosive-factories and controlled establishments.

Even at the present time serious detentions of rolling stock are taking place at these various centres, and the companies are suffering much inconvenience as a result thereof.

I am, therefore, to suggest that the three Departments concerned, viz., War Office, Admiralty and Ministry of Munitions, should each appoint a representative who should attend at these offices each week, on a day and at an hour to be fixed, to take prompt action in regard to delay to wagons at various depôts under their control.

It would be necessary, in the first case, for the representatives of the Departments (acting in concert with the railway officials to be appointed by this committee) to lay down what statements they will require to be prepared each week for submission to the meeting.

All three departments agreed to the suggestion thus made, and there was accordingly formed a Joint Standing Committee which, consisting of representatives of the War Office, the Admiralty and the Ministry of Munitions, the Goods Managers of the Lancashire and Yorkshire, the London and North Western, the Great Western, the London and South Western, the Great Eastern and the Great Central Railways, and the Superintendents of the Lancashire and Yorkshire, the North Eastern and the South Eastern and Chatham, was to meet once a week, under the presidency of the Chairman of the Goods Managers' Conference, in order to deal with the "Supply of Wagons and Control of Government and Contractors' Traffic." [1]

While, in fact, the Government had made use of the Act of 1871 in order to obtain "control" over the railways, the latter now found it imperatively necessary that "control" should be exercised, in turn, over Government departments and Government contractors in the interests of transport efficiency.

When the committee appointed under these conditions held its first meeting, on November 22nd, 1915, the chairman, Mr. H. Marriott (Lancashire and Yorkshire Railway), explained that its function would be to deal with matters affecting delay in unloading and transit of Government and contractors' traffic and to secure the co-operation of the various Government departments in obviating unnecessary haulage of traffic.

It was, also, made clear to the representatives of the Government by the railway members of the committee that the demands of the Government and their contractors upon the railway companies had become so heavy and exacting that, unless some tangible relief were given in the way of assuring to the companies a better use of their rolling stock,

[1] A representative of the Food Ministry and the Chief Goods Managers of the Midland, Great Northern and Caledonian Railway Companies were afterwards added to the committee. So, too, was a representative of the Forage Committee, who was able to render a great and much-appeciated service in securing the better loading of Government hay and straw, the shifting in transit of "bad-riding" traffic having previously been a source of enormous difficulties to the railway companies. Subsequently the meetings were also attended by a representative of the Roadstone Control Committee.

the Executive Committee would have to notify that, sooner or later, there would be a serious breakdown in the railway facilities in relation to naval and military demands.

So practical, however, were the lines upon which the committee operated, and so effective was the action taken, that the threatened breakdown was averted, and the evils which, at the outset, loomed so large were eventually reduced to comparatively small proportions.

The great advantage of this Joint Standing Committee was that it brought railway officers experienced in all traffic questions into direct contact with representatives of the State departments concerned in the evils which had arisen, and able to exercise the necessary authority for securing a remedy. The weekly reports already being made by the Railway Clearing House Inspectors were now considerably expanded by supplementary data supplied by the railway companies themselves in respect to places other than those visited by the Inspectors, and a copy was given to each member of the committee so that he might be the better able to criticise, investigate or explain the particular instances in which he was directly interested. Later on, in order to expedite investigations and the enforcement of remedial measures, copies of the returns were also forwarded to certain designated naval and military officers or to Ministry of Munition officers especially authorised to take local action.

The returns gave either specific details in regard to each case reported (name of place ; owner and number of wagon or sheet ; sending station ; nature of traffic ; date of wagon label ; date of discharge ; and number of days under load from date of arrival), or simply the total number of undue detentions of stock at particular places, without any details. The proportion in which the returns were made under these two categories may be judged by the following summary of the figures for the period from January 7th to 13th, 1916 :—

	Detailed in Return.	Reported, but not Detailed.	Total.
Wagons—			
Number . . .	765 ..	3,432 ..	4,197
Days' detention . .	17,842 ..	31,632 ..	49,474
Sheets—			
Number . . .	240 ..	806 ..	1,046
Days' detention . .	5,673 ..	7,801 ..	13,474

These figures—which related to 168 places reported on and included only detentions beyond seven days from the day of arrival—may also be regarded as significant of the extent to which detentions of wagons and sheets concerned in Government traffic were still experienced at a time when the Joint Standing Committee was being informed that there was already—thanks to its own efforts—"a distinct improvement"!

In March, 1916, a scheme was carried out alike for securing uniformity in the returns, for preventing any overlapping in regard to those prepared by the Railway Clearing House Inspectors and by the railway companies

respectively, and for amplifying the returns themselves so that they would include particulars as to—

(*a*) Detention to railway companies' wagons and sheets for seven or more days.
(*b*) Internal use of wagons and misuse of sheets or ropes.
(*c*) Unnecessary or extra haulage of railway stock, e.g. :—
  i. Traffic conveyed from port to port;
  ii. Similar traffic conveyed in both directions.
  iii. Traffic re-labelled to a destination involving greater haulage than would have been needed had the traffic been forwarded direct from the sending point.
(*d*) Short haulage of traffic which should go by road (i.e., when the road cartage would not exceed 10 miles).

Wagon Detention Statistics.

The fuller returns in regard to instances of undue detention of railway wagons for longer periods than seven days confirmed all that the Railway Clearing House Inspectors had previously told, and showed that the evil was of even greater extent than had been supposed. So numerous, in fact, were the instances recorded by Inspectors and railway companies in combination that the depleted staff of the Railway Clearing House could not, at first, deal with them all, and so continued to give "typical" examples only.

What proportions the figures assumed, even under these conditions, has been indicated by the table already given on page 308. The following further table, for the week ending January 6th, 1916, shows how individual railways were affected :—

Company Furnishing Particulars.	Number of Wagons.	Total Days' Detention.
Barry	66	415
Caledonian	28	237
Cheshire Lines Committee	40	479
Furness	3	12
Glasgow and South Western	230	2,203
Great Central	66	852
Great Eastern	69	436
Great Northern	23	199
Great Western	10	94
G.W. & L. & S.W. Jt.	42	420
Highland	18	157
Lancashire and Yorkshire	20	131
London and North Western	1,018	4,066
Midland	242	2,019
Mid. & S.W. Jt.	41	331
North British	77	460
North Eastern	229	1,883
South Eastern & Chatham	17	166
Total	2,239	14,560

As regards the state of congestion at arsenals, ordnance depôts, camps, military sidings, munition works and controlled establishments which

resulted from the said detentions, one of the further reports made on the number of wagons under load at certain selected places at 6 p.m. on specified dates in December, 1915, and January, 1916, gave such figures as 256, 280, 307, 341, 369, 490, 600, 728, 870, 1,004, and 1,122, the last-mentioned figure being the total number of wagons which, on December 22nd, 1915, were awaiting the convenience of four consignees on railway sidings at Newcastle-on-Tyne.

The majority of the detentions related to periods of from ten to twenty, twenty-five or thirty days; but there was, especially in the first two months or so of the Control Committee's operations, a large proportion of instances in which the wagons had been kept under load for from thirty to sixty days; there was a considerable number where the period ranged from sixty to 150 days, while instances in excess of 150 days, and even up to 300 or more, were not infrequent.

Wagon Detention Remedies.

One of the most effective measures adopted in any particularly bad instance included in the weekly returns was for the department concerned—War Office, Admiralty, or, more especially, the Ministry of Munitions—to send to the place where the trouble had occurred a special representative whose business it would be to see that every possible measure was adopted for clearing the wagons under load and preventing further delays and congestion. In some cases conferences were held on the spot between representatives of the departments, the railways and the firm, with a view to seeing what could be done. In the Sheffield district the Ministry of Munitions appointed a man whose only duty it would be to visit controlled works and look after the railway wagons. Elsewhere the district representatives of the Ministry were required to take action, co-operating with the railway officials, instantly the report of any bad detentions reached them. Like action was expected, also, on the part of naval and military officers. At Poplar, where the congestion of traffic to and from the docks was especially acute for a somewhat prolonged period, there were daily conferences between the railway officers and the military authority in charge.

The nature of the remedies applied varied according to circumstances.

Where more labour was required for the work of unloading, steps were taken to secure it. On some occasions the representative of the Ministry of Munitions obtained and provided labour, which the firm could not get; on others, the military authorities directed men belonging to the Railway Troops of the Royal Engineers to assist, and, on still others, when men were not available, women were employed to do the unloading.

At a munition works which had had 463 wagons under load for periods of from twelve to fifty-nine days, the Ministry of Munitions' representatives sent to inquire arranged for the putting on of a special staff to do the unloading, and secured the appointment of a man whose duty it would

be to make sure that the work was done. Subsequently the appointment of a traffic manager at large works was an expedient frequently adopted.

Where accommodation was lacking—as in the case of military camps just set up, ordnance and munition works not yet fully equipped, or controlled works suddenly called on to make a great increase in their production—it was agreed that additional sidings should be put down, or extra storage provided, in addition to what was already being done to ensure a speedier clearance of wagons. In some instances the Ministry of Munitions requisitioned accommodation for dumping thereon the contents of wagons which could then be liberated more speedily.

When greater facilities for unloading were needed, they were secured by the adoption of some such expedient as the provision of additional crane power.

When, owing to a temporary block, wagons could not approach within a convenient distance of their destination, they were in many instances unloaded where they stood, their contents being taken on by road for the remainder of the journey.

When the state of congestion was hopeless for the time being, " stops " were put either to the whole or to the less important of the traffic until a clearance had been made.

Apart from more or less temporary expedients, the remedy chiefly aimed at was an effective system of controlling and regulating the traffic in order to ensure that loaded wagons were accepted or forwarded by the railways only in such number as could be dealt with promptly on their arrival at destination. The main reason for the difficulties which arose continued to be, either that the officers or individuals in charge of arsenals, camps, works, etc., often influenced by more zeal than discretion, ordered things forward greatly in excess of their capacity to store or utilise them promptly ; or, alternatively, that the senders rushed things off without any inquiry as to conditions at the other end, and with, perhaps, an idea that, if only they could get the traffic on rail, the railway people could be trusted to do the rest.

Traffic Regulation Systems.

One of the principal objects of the Railway Executive Committee in suggesting the appointment of a Joint Standing Committee of departmental and railway representatives had, as we have seen, been to secure a system of control designed to bring about a regulation of traffic on the basis suggested above. The departments favoured this idea, and before the end of March, 1916, it was reported that traffic-regulation systems had been introduced with satisfactory results at over twenty military centres, ordnance depôts, munition factories and controlled establishments.

A like course was adopted, also, at certain of the docks. In May, 1916, for example, the congestion at Cardiff, Barry and Penarth of traffic

awaiting shipment was especially troublesome, and representatives of the Admiralty, the War Office, the Ministry of Munitions and of the Great Western, the London and North Western, the Taff Vale, the Barry and the Cardiff Railways met at Cardiff with a view to adopting some system of controlling the flow of Government traffic to the ports in question. As the outcome of the conference, it was arranged that the proposed control should, as regarded military and Ministry of Munitions traffic, be exercised by the District Goods Manager of the Great Western Railway at Cardiff, acting in co-operation with Major H. Clarke, who was appointed by the War Office Deputy-Assistant Director of Transport at Cardiff. Control over Admiralty traffic was to be effected by the authorities of that department in London, who were not to allow Admiralty consignments to be forwarded to Cardiff until a boat was ready there to receive them. Should congestion nevertheless occur, owing to a delay of shipping, the Admiralty was to take immediate action on information being conveyed to that department through Major Clarke. The inauguration of this control system, and of other changes made in working details, greatly improved the traffic conditions in the three ports.[1]

A similar conference between naval and military and railway representatives was held at Devonport Dockyard with such good results that whereas the number of wagons under load there on November 25th, 1915, was 638, it had been reduced by January 25th, 1916, to 177, while the number of railway wagons appropriated for internal use in the dockyard had declined between the same dates from 149 to four.

Then, again, it was found that in the Plymouth and Devonport district a considerable number of wagons had been diverted from the railway service for Government traffic passing locally, the "wagon-shortage" being proportionately aggravated. Meetings were held at Plymouth between representatives of the Government departments and of the railways, and, although it was admitted that the internal user of the wagons could not be altogether avoided, an agreement was arrived at that relief should be afforded to the railways by (1) purchase by the Ministry of Munitions of twenty wagons to do some of the internal work for which the railway companies' wagons were being used; (2) a speeding up in the discharge of lighters by securing additional labour and by

[1] From the time that this Cardiff control arrangement came into operation, in 1916, there was no material accumulation of Government traffic at any of the three ports until January, 1917, when a bad state of congestion occurred at Barry Docks. On Sunday, January 28th, there were on hand at those docks no fewer than 600 trucks, of which 568 were on account of Admiralty transport, while 236 of them had been standing in the docks for seven days or more. The Supply and Control Committee arranged for a local inquiry, and this was presided over by Major Bedford-Glasier (War Office), and attended by representatives of the Military Embarkation Staff, Cardiff, the Admiralty, the Ministry of Munitions, and the Great Western, Barry, Taff Vale and Cardiff Railways. It was found that a ship ordered from Scotland to Barry was due to arrive there on January 6th. Cargo sufficient to supply a load was, in accordance with the control arrangement, sent forward, but the boat went aground on the voyage from Scotland, and another vessel was sent to Barry to replace her. The accumulation of trucks was then speedily worked off. The incident was of no great importance in itself; but it may be recalled here as showing how congestion at ports might arise and as further illustrating the manner in which troubles of this kind were dealt with under the system which had been adopted.

the working of longer hours; and (3) provision of increased cartage facilities.

Conditions at Woolwich Arsenal in the autumn and early winter of 1915 were still deplorably bad—from a railway point of view. Wagons were retained under load because there was not a sufficiency of storage accommodation, or because materials were being received in far greater quantities than those in which they could be used; wagons that had been unloaded were retained for inter-Arsenal traffic; wagons specially designed for certain kinds of traffic were loaded back with any kind of traffic; and so on with other things, besides.

On the reports concerning all these matters being laid before the Control Committee, the representatives thereon of the Ministry of Munitions promised that active measures should be taken to remedy the trouble. Consultations with South Eastern and Chatham officers were held at the Arsenal; efforts were made to secure the more expeditious release of wagons; additional storage accommodation was provided by the Arsenal authorities, and steps were taken to regulate the flow of traffic, and to avoid the internal user of railway companies' wagons.

Greater consideration was also secured for the special types of railway rolling stock. So it was that on April 10th, 1916, the daily average of wagons held under load for Woolwich Arsenal by the South Eastern and Chatham Railway Company was reported to the Control Committee to be about 400, as against 1,200 in November, 1915. The committee thereupon decided to place on record its appreciation of the assistance rendered by the Ministry of Munitions and the authorities of the Arsenal in obtaining this result.

In the case of one large firm engaged on Government work in a certain district, a Railway Clearing House Inspector found, early in January, 1915, in addition to 300 private wagons loaded with coal, 1,050 railway-owned wagons awaiting the firm's acceptance. Of the latter number 304 had been under load for over seven days, and a considerable proportion of the 304 had been detained for periods of from seventy to 100 days. The Inspector also found that the firm were making use of many railway wagons for their own purposes in the interior of the works, this practice having, apparently, been followed for some considerable time. The attention of the Ministry of Munitions was called to the matter by the Railway Executive Committee, who observed: "It is no wonder that the railway companies are short of wagons if this sort of thing is allowed to continue." It was suggested that the Ministry should appoint some one to visit the works, get the arrears of wagons cleared up, and take such action that further incoming traffic would be offered for conveyance to the works only in quantities that could be unloaded on arrival without undue detention of wagons.

The suggestion was at once acted upon. A representative of the Ministry of Munitions, sent specially to the works, reported that the congestion was, indeed, very acute. A temporary stop was put to the firm's traffic, subject to certain exceptions—owing to the urgency of the work—

and other measures were also taken; but the Railway Executive Committee, on being informed of what had been done, considered that no real improvement would be effected at the works until some definite system for the regulation and control of traffic had been put into operation. They sent for the Goods Manager of the railway concerned, and, after consulting with him, brought about a conference at the works between representatives of the firm, the Ministry of Munitions and the railway company. This conference led to the adoption of a system of wagon clearance and traffic regulation which produced such good results that on February 6th, 1916, the number of wagons under load had been reduced to 272 inside the works and 421 outside, whereas on December 29th, 1915, the number outside, apart from a considerable collection inside, had been 1,447.

In the evidence he gave before the Select Committee on Transport in October, 1918, Sir Herbert Walker said that the steps taken by the railways to regulate the traffic to coincide with the rate at which it could be dealt with at the receiving end had resulted in less congestion of the sidings and running lines and been perhaps one of the best things they had been able to achieve. Sir Herbert continued, in reply to questions put by the Chairman:—

> When we found we were getting into trouble for want of wagons we made it a stringent rule that no traffic was to be accepted for loading unless it was evident that it could be unloaded and dealt with at the receiving end.
>
> Have you power to do that? It was suggested to us yesterday in evidence on another subject that the railways had no power to refuse traffic.—We cannot discriminate as to whose traffic we shall take and whose traffic we cannot take; but if a certain station cannot receive the traffic we can refuse to allow it to be loaded on our wagons and stand on our sidings.

Ministerial Action.

In addition to the direct support given to the railways through the operations of the Control Committee, the Director-General of Munitions Supply sent, in January, 1916, circular letters alike to all controlled establishments and to all Government contractors on the subject of the clearance of railway wagons.

In the letter to controlled establishments, reference was made to the concern which Mr. Lloyd George, then Minister of Munitions, felt on account of the very serious complaints reaching him from many sources as to congestion on the railways and short supply of wagons. It was found in many cases, the letter proceeded, that this short supply was due to the action of manufacturers in detaining large numbers of wagons under load for an altogether unreasonable length of time. In some cases wagons under inward load were kept waiting for a convenient opportunity to unload; in others empty wagons were loaded up with traffic although it was known that, on account of inspection, or otherwise, the wagons could not possibly be forwarded for several days. The situation was regarded by the Minister as so serious that it was desired

to enlist the special interest of the managers of controlled establishments in order that they should strongly impress the matter upon their works officials. The volume of munitions traffic was increasing rapidly; the demand for railway wagons to carry the traffic would increase in proportion, and, unless more economical use were made of these wagons than was then the case, it would be impossible to attain the output required in order to carry out the programme which had been agreed upon.

The Government contractors were told that there was urgent need for liberating all railway wagons and railway sheets with the least possible delay. The demand for them was extremely heavy; there was a serious shortage in all the principal manufacturing areas as well as at the ports, and it was essential that the greatest possible use should be made of the stock available, and that wagons should not, on any account, be kept standing under load. The contractors were asked, therefore, to arrange for the discharge of all incoming wagons at the earliest moment and to avoid loading up wagons with traffic which could not be forwarded immediately. The circular letter continued :—

> Manufacturers sometimes order traffic forward in excess of requirements or unnecessarily far in advance. This practice should cease, and firms should arrange for the regulation of their traffic to an amount which can be readily handled.

Inasmuch as the importance of the matter, "at the present time," could not be exaggerated, the contractors were urgently requested to co-operate with the Ministry and the railways in dealing with it; and they were further asked to arrange for a notice to the following effect to be hung in a prominent place in their works, so as to bring to the attention of all concerned the necessity for liberating wagons immediately :—

CLEARANCE OF RAILWAY WAGONS.

All loaded wagons received MUST BE UNLOADED without delay. EVERY WAGON IS URGENTLY NEEDED.

All empty wagons MUST BE RETURNED to the railway companies unless required for immediate loading and dispatch.

Outward wagons MUST NOT BE LOADED unless they can be dispatched immediately.

All ropes and sheets received MUST BE RETURNED AT ONCE to the owning company and MUST NOT BE USED FOR ANY OTHER PURPOSE.

F. W. BLACK,
Director-General, Munitions Supply.
Ministry of Munitions, London, S.W.
January, 1916.

Under date May 24th, 1916, there was issued an Army Council Instruction in which it was said :—

> 1. Consequent on the extraordinary demands being made upon the railways, principally in connection with the conveyance of munitions and the movement of troops, economy of transport continues to be a matter of vital importance. In

order to relieve the position, it is essential to expedite the clearance of wagons and to improve the working of the rolling stock. With a view to effecting improvements, weekly returns showing undue detentions to railway wagons, or unnecessary haulage, are being rendered to the War Office through the Railway Executive Committee.

2. Copies of these particulars, showing misuse of wagons, are also rendered direct by the local railway officials concerned to the Railway Transport Representative at Headquarters of Commands, or to Embarkation Commandants or Officer i/c War Office Depôts, so that action can be at once taken with regard to the off-loading of outstanding wagons and effective measures, if necessary, applied to prevent, or, at any rate, reduce to an unavoidable minimum, similar delays in the future.

3. In addition to wagon detentions, questions of reconsignments, the misuse of wagons and wagon sheets, avoidable mileage, short-distance traffic and other cognate matters brought to notice will, except as provided for by para. 4, be investigated by the Railway Transport Representative of the Command, so that he can discuss these cases with the district goods managers or divisional superintendents and consult with them with a view to effecting an improvement in the future. All questions coming within the scope of this paragraph and which are not settled locally, or which involve points of general importance, will be reported to the War Office.

4. In the case of ports of embarkation, depôts or centres directly under the War Office, the detentions will be taken up locally and referred to the War Office direct when necessary, and no action by Commands will be required in these cases.

Sheets and Ropes.

The reference made in the notice issued by the Director-General, Munitions Supply, as given above, to railway sheets and ropes touches on another serious cause of wagon-shortage since the sheets (and the ropes that tied them) were often indispensable to the transport of traffic in the open wagons which might either be alone available or be alone adapted to the conveyance of the commodity carried. A considerable amount of munition and other Government traffic went in open wagons, protected by sheets, and a sheet-shortage was, in effect, often equivalent to a serious aggravation of the wagon-shortage.

In June, 1915, the Director of Movements issued from the War Office to the General Officers Commanding-in-Chief of the various Commands an Instruction which said :—

> Complaints have been received from the railways that railway-truck sheets and ropes have been appropriated for military purposes. I am directed to request you to cause this practice to be stopped, and all railway sheets and ropes now in use to be returned to the nearest railway station forthwith.

The issue of this request did not appear to have any appreciable effect. There was, on the contrary, an increasing sheet-shortage, mainly due, not to the neglect of the railway companies to provide a sufficient number, but to detention or misusage in arsenals, munition factories, military camps, docks and controlled establishments, which retained the sheets sent with Government traffic and made use of them for all sorts of purposes other than those for which they were intended. Thus the sheets were utilised to cover cement, building materials, wire-rope, steel-

plates, straw, wagons, motors, cranes, camp furniture, machinery, casks, stores, asbestos, etc., while many of them were converted into huts, propped up as weather screens, spread over the defective roofs of workshops, piled into stacks, or, together with railway ropes, were just left "lying about." In one instance a London and North Western sheet was found to have been cut into strips and tied round a portable boiler. All this, too, was being done at a time when much delay or congestion alike of Government and of traders' traffic might be occurring for lack of these very sheets.

When visiting Catterick Bridge Military Camp, in the Northern Command, on September 22nd, 1915, a Railway Clearing House Inspector counted there 123 railway sheets which were being improperly used or unduly detained. At Woolwich Arsenal, in October, 1915, as many as 390 railway sheets and 44 ropes were in use for covering or securing goods either stored or awaiting dispatch by rail. At a munition factory in Scotland 100 railway sheets were, on December 18th, 1915, found to have been appropriated for internal use. By January 8th, 1916, the number had increased to 140. Another munition factory, in Wales, was responsible for 42 ; Rosyth Naval Base for 40, and many other places for smaller numbers. For the week ending January 13th, 1916, the specific instances of sheet-detention and misusage reported to the Control Committee were 1,046, and the aggregate days' detention reached a total of 13,474.

The action taken by the Control Committee in regard to sheets was on the same general lines as in regard to wagons ; and once more the railway interests secured the practical and successful co-operation of the Government departments.

Early in December, 1915, the Railway Executive Committee obtained the assent of the War Office authorities to an arrangement under which, on the initiative of the local railway officials, a periodical search would be made at the various military centres for wagon sheets and ropes, with a view to checking their detention and misuse and securing their return to the railway companies owning them. One circular letter was thereupon sent out by the Executive, informing the railway companies of the arrangement, and another was forwarded by the Director of Movements to the General Officers Commanding-in-Chief of the various Commands. In the latter communication the Director of Movements stated that the shortage of railway companies' wagon sheets and ropes had become "a vital matter." He advised that a regular day should be appointed at all important military depôts for their collection and return, and he asked that, on the receipt of a request from the local railway authorities, a military representative should be nominated for each centre to accompany the railway officer engaged on the search.

In January, 1916, the Railway Executive made arrangements with the Admiralty and the Ministry of Munitions for a similar search at places under their control. It was then further agreed with all three departments that the search should be a weekly one.

The Admiralty, in announcing the arrangement to those concerned in its own decision, said :—

> In view of the urgency of the requirements of railway plant, a delay exceeding two days in unloading trucks is considered serious, and every effort should be made to expedite the unloading and release of trucks, etc.
>
> In order to assist in this matter, a system should be instituted by which a general inspection of railway companies' trucks, sheets and ropes in each establishment or local siding will be made on one day in each week by a representative of the establishment and one of the local railway officials with a view to the early release and return of the trucks, etc., to the railway companies.

The circular sent out by the Ministry of Munitions intimated that, owing to the abnormal demand for wagon sheets, ropes, etc., for conveyance of munitions traffic, the supply of these articles had become "a very serious matter." It suggested the appointment of a regular search-day at all factories, stores and depôts engaged in munition work, and asked that instructions should be given both for the collection and prompt return of the sheets and ropes and for giving every facility to the local railway authorities desirous of obtaining information as to detentions or misusage. Lists of factories or establishments controlled by the Ministry of Munitions in which the periodical search was to be made were afterwards issued from time to time.

A search made at one large munition works towards the end of January, 1916, led to the return of no fewer than 185 wagon sheets to various railway companies. At Catterick Bridge some men from the Royal Engineer Railway Troops were put on to prevent the detention and misuse of sheets. At Woolwich Arsenal the authorities issued orders forbidding the use of railway sheets for internal purposes ; announced that these orders would be rigidly enforced ; appointed men whose duty it would be to see that all sheets were promptly returned to the railway companies, and facilitated the periodical search by placing a motor lorry at the disposal of the searchers, so that they could at once remove any railway sheets they found in their journeys through the works. Special measures were also taken at many other places.

Improved Conditions.

The final effect of all the exertions thus made, whether by the Railway Executive Committee, by the Joint Standing Committee for Wagon Supply and the Control of Government and Contractors' Traffic, by the individual railway companies, or by the State departments themselves, was that by June, 1916, much improvement had been effected in the release of railway stock at naval and military depôts, military camps, munition works, and controlled establishments. The extent of this improvement can be judged from the following table, though the fact is to be borne in mind that the figures in regard to wagons still related, at this time, to wagons which had been detained for a period exceeding seven days :—

Number of Places Reported On.	Period (1916).	Wagons. Number.	Wagons. Days' Detention.	Sheets. Number.	Sheets. Days Detention.
168	Jan. 7–13	4,197	49,474	1,046	13,474
140	,, 14–20	1,615	27,200	254	4,016
127	,, 21–25	1,509	21,361	251	4,025
138	Jan. 26–Feb. 1	1,894	26,205	207	3,054
154	Feb. 2–8	1,665	25,323	345	5,598
127	,, 9–15	1,352	18,119	210	3,615
148	,, 16–22	1,407	19,450	330	4,062
141	,, 23–29	1,520	20,412	637	7,905
136	Mar. 1–7	1,676	24,811	751	9,813
143	,, 8–14	1,392	18,917	383	5,430
136	,, 15–21	1,127	15,225	224	3,235
127	,, 22–28	1,187	16,669	146	1,921
117	Mar. 29–Apr. 4	1,335	18,481	303	3,710
108	April 5–11	1,065	13,346	139	1,437
136	,, 12–18	966	12,836	155	1,826
137	,, 19–25	951	12,791	98	1,065
159	April 28–May 2	1,251	15,800	273	2,540
145	May 3–9	1,141	13,718	211	2,064
127	,, 10–16	1,414	16,685	255	2,275
135	,, 17–23	1,353	16,078	237	2,318
138	,, 24–30	1,488	20,167	193	2,445
147	May 31–June 6	1,075	12,632	157	1,837
144	June 7–13	900	10,339	182	1,938

The return for June 7th–13th was considered so far satisfactory, while the improvements secured alike in Government establishments and in Government traffic in general were known to have been so well established, that on July 5th, 1916, the Control Committee decided to hold only monthly meetings in future unless the position at any time should render more frequent meetings desirable. As regarded the returns, it was arranged that thenceforward the only instances of undue detention that need be reported to the Joint Committee were those in which local representatives of Government departments and railway companies, operating individually or in combination on the basis here detailed, had been unable to effect a remedy.

Early in September, 1916, it was announced that "special steps" were being taken by the Ministry of Munitions at all works and depôts under its control to obtain the prompt release of rolling stock, and that a further improvement had resulted.

The instances of detention reported on September 29th, 1916, as those in which local effort to secure a remedy had not been successful were :—

Wagons—	
Number detained	177
Aggregate days' detention	2,916
Sheets—	
Number detained	6
Aggregate days' detention	65

At Woolwich Arsenal there was an increase rather than a decrease in that internal user of railway companies' wagons which, no less than

the holding of them up under load, prevented their use for ordinary transport purposes, though an improvement was effected in regard to the misuse of sheets and ropes. These facts are indicated by the following table, which, brought under the notice of the Control Committee in April, 1917, gives the results of inspections made by "search parties" at the Arsenal during the periods stated :—

Period.	No. of Days.	No. of Wagons Lying about or Improperly Used.		
		Used. *Internally.*	*Sheets.*	*Ropes.*
Jan. 10–27, 1916	14	199	474	72
Mar. 17–April 5, 1916	9	300	250	23
May 1–26, 1916	19	442	298	13
Aug. 7–25, 1916	17	535	282	15
Oct. 3–21, 1916	18	480	250	7
Nov. 20–Dec. 5, 1916	15	433	242	14
Dec. 28–Jan. 13, 1917	14	472	257	5
Jan. 30–Feb. 14, 1917	13	540	236	11
Mar. 3–20, 1917	13	614	297	7

The position as here shown was fully considered at a meeting held between the Arsenal authorities and representatives of the South Eastern and Chatham Railway, and shortly afterwards it was announced that negotiations were then in progress for obtaining an independent supply of wagons for internal use in the Arsenal.

Short Haulage.

Until the Control Committee got to work, a good deal of Government traffic was loaded into railway wagons and sent off to destination with an apparently complete disregard alike of the shortness of the distance it was to go and of the inexpediency of using the railway at all (especially under war-time transport conditions) when, in a vast majority of instances, it would have been far preferable to send by road and keep the railway wagons for longer journeys.

During the month of February, 1916, there were reported to the Joint Conmittee twenty-four instances on the South Eastern and Chatham Railway in which an aggregate of twenty-eight wagons was used for the conveyance of Government hay for distances of from two miles to five and a half, as, for example, Nutfield to Redhill, two miles ; Eynsford to Sevenoaks, five and a quarter miles, and Godstone to Redhill, five and a half miles.

From Grantham came such instances as the use of eleven railway wagons for conveying loads of firewood, tent bottoms, mess covers, plates, braces, etc., from one part of the town to another, although the distances by road did not exceed from half a mile to three miles ; the loading of crates of bicycles into a Midland wagon at Grantham Wharf for conveyance to Peascliffe Siding, Grantham, and the consignment by rail of some sacks of bran from one Grantham siding to another.

In April, 1916, a London and South Western wagon was sent from Chiswick to Nine Elms (a distance by road of five miles) with—an empty basket! Between March 30th and April 26th, 1916, the L. & S.W. had to haul twelve wagons of tents, bedsteads and tenting stores from Gun Wharf, Portsmouth, to Hilsea sidings, a journey by road of three and a half miles. A Great Western wagon took 300 trestles from Aldershot to Woking, a distance of eight miles. On April 19th, 1916, some London and North Western wagons were made use of for the conveyance of firewood six and a half miles from Wolverton to Bletchley. The North Eastern Railway conveyed seven wagon loads of chaff, meat and bread from one camp to another only seven miles away by road. They were also required to find wagons for taking firewood six and a half miles; bricks, five miles; timber, three miles; ashes, a mile and a half, and shells, one mile. On the Lancashire and Yorkshire Railway five wagons of manure were sent to four destinations distant from two to four miles by rail and two or two and a half miles by road. In March, 1916, it was reported that on the Great Eastern Railway 132 wagons had recently been used for the conveyance (mainly) of hay and straw for distances of ten, eight, seven, six, three, two, one and three-quarters, and one and a half miles respectively, while in one case the distance was no more than three-quarters of a mile.

From April, 1916, when particulars began to be collected on a more systematic scale, hundreds of cases were recorded in which rail transport had been used for the conveyance of Government traffic—clothing, flour, oats, bran, hay, machines, medical stores, etc.—for distances of less than ten miles, a good proportion being hauls of from one mile and a half to five miles. Between May 8th and May 13th there were reported from York alone eighty-eight instances—involving the use of 383 wagons—in which oats, hay, timber, scrap, firewood, bricks, sand, meat, groceries, etc., had been sent by rail on journeys ranging from one mile to eight miles, the distance in thirty-one cases out of the eighty-eight being less than five miles.

A radical remedy for these rail-transport abuses under Government authority was clearly called for. The worst offenders had been those who were responsible for the military hay and straw traffic; but the Control Committee was able to arrange with the Forage Committee that, in cases where the distance of the journey by road did not exceed ten miles, hay and straw traffic should not be accepted for conveyance by rail at all, unless in very exceptional circumstances.

As regards the short haulage of other classes of traffic, the Control Committee once more organised local conferences between railway representatives and the authorities concerned or adopted other measures with a view to securing the substitution of road transport, thus affording to the railways a certain degree of relief. In the result the principle already applied to forage traffic was extended more or less completely, by the departments and the railways in combination, to Government traffic in general, a ten-mile rail-haulage limit being imposed unless

good and sufficient cause for disregarding this certainly reasonable rule could be shown.

Once more the remedy applied answered so well that only a very few cases of short haulage were included in the returns presented to the Control Committee at their meeting on October 10th, 1916, while the explanations given in respect to these were considered satisfactory. Other cases were, however, still brought forward from time to time. It was reported, for instance, in February, 1917, that for some weeks past the London and North Western had had to supply five trucks a day for the moving of sand—of which there was still a large quantity to pass—from Willington to Cardington, a distance of three miles, The Admiralty representative, who inquired into the matter, found that the traffic could not be carried by road ; but it was suggested that the contractors should hire wagons for themselves instead of utilising those of the railway company. Perhaps the "record" in the way of a short-distance railway haul in war time was attained in June, 1917, when it was reported that a locomotive and wagon had been employed to convey some high explosive a distance of *a quarter of a mile*, the reason given by the Ministry of Munitions people being that "a suitable road was not available."

The enforcement of the ten-mile rule on Government traffic still left the railway companies under their statutory obligation to carry traders' traffic between any pair of stations for which rates were quoted on the rate books ; and, inasmuch as many of these rates were for quite short distances—from a mile and a half, or so, upwards—traders who experienced difficulty in the way of cartage were ready enough to take advantage of them until the same principle was largely applied to ordinary commercial traffic. Even then the rule was not to be enforced in regard to the conveyance of wheat or any kind of food-stuffs. So it was that when, for instance, a certain trader wanted to send by rail a consignment of 45 qrs. of wheat to some mills only five miles distant by road, the railway company concerned had to comply with his wish, although their doing so meant : cartage from farm to station, one mile and a half ; rail journey three miles and a half ; cartage from station to mills, one mile and a half.

Unnecessary Haulage.

What was regarded by practical railway men as "unnecessary haulage" of Government traffic assumed a variety of forms.

There were, for example, numerous instances of wagon loads of commodities being consigned from, say, A to B, only to be re-consigned from B to C, with the result that there was often a substantially greater haulage than if the consignment had gone direct from A to C. How this operated may be judged from the following typical example of a wagon sent on December 6th, 1915, from Gainsboro' to St. Botolphs and on from St. Botolphs to Salford :—

Gainsboro' to St. Botolphs	152 Miles.
St. Botolphs to Salford	215 ,,
Total distance covered	365 ,,
Gainsboro' to Salford, direct	74 ,,
Excess haulage	291 Miles.

In some instances more than one intermediate place was visited, as in the case of a wagon which, dispatched from Edwinstowe on July 22nd, 1915, travelled as under :—

Edwinstowe to Nottingham	37 Miles.
Nottingham to Richmond (L. & S.W.)	177 ,,
Richmond to Nottingham	177 ,,
Nottingham to Ashford (S.E. & C.)	210 ,,
Total distance covered	601 ,,
Edwinstowe to Ashford, direct	247 ,,
Excess haulage	354 Miles.

In twenty-two instances on the London and South Western Railway, in November and December, 1915, and January, 1916, consignments of hay, straw and chaff, occupying from one truck up to thirty, and aggregating a total of 334 trucks, were forwarded to certain stations, only to be re-labelled and taken on thence by rail to some other place. The Great Eastern had a like experience between December 28th, 1915, and January 21st, 1916, with fifty-four trucks of hay which they kept on hand at the first destination for periods of from one day to nine days before the ultimate destination had been decided on.

In order to check these and other abuses of rail transport for which it was itself mainly responsible, the Forage Department sent out, in December, 1916, to every forwarding supervisor and storekeeper on the strength of the department a circular on "Wastage of Railway-Wagon Accommodation" in which it called attention to the great shortage of railway trucks, spoke of the need for getting the maximum amount of carrying power out of the existing wagons, and suggested that, as the Forage Department was loading about 5,000 railway trucks per week, it was open to them materially to conserve or to waste wagon-power in proportion as their organisation was perfect or otherwise. The forwarding supervisors and storekeepers, more especially, could do much in this way, and, with a view to their guidance on the subject, the circular offered to them a series of suggestions as to the methods they should adopt in order to avoid the said wastage.

Instances of unnecessary haulage continued to occur in connection, also, with other Government departments. During ten days in December, 1916, seven wagon loads of hand grenades were sent from Soho, near Birmingham, to Chesterfield, for inspection, and, being found unsatisfactory, were sent back to Soho. The Committee naturally asked why arrangements could not be made for the inspection to be made at Soho, and thus save railway trucks and haulage. Arrangements were

made accordingly by the Trench Warfare Department ; but the whole system of " inspection " of military necessaries at certain centres, and the demands it made upon the railways, called for close and constant watching.

Light Loading.

Numerous instances were also recorded in which wagons having a normal carrying capacity of from five to ten tons, according to the nature of the commodity, were used for the transport, often on long journeys, of Government consignments weighing not more than half a ton, and often only a few cwts., if not even less than a single cwt. At the time, in fact, the Control Committee was constituted, there seemed to be a rooted conviction in the minds of Government officials in general, and of Arsenal officials in particular, that whenever they received a telegram stating that something was wanted at once, they should put the desired commodity in a railway wagon, by itself, and so forward it by train without regard to such considerations as lightness of weight or distance of the journey. If two or more small consignments were going by the same train to different places in the same direction it was no unusual thing for each to be placed in a separate wagon.

The results to which these circumstances led in the way of light loading of individual wagons may be judged from the following examples of traffic dispatched by rail from Woolwich Arsenal in the month of January, 1916 :—

Destination Station.	Railway.	Contents of Wagon.	Weight of Consignment. Cwts.	qrs.	lbs.
Parkeston Quay	Great Eastern	5 boxes of cartridges	7	2	0
Invergordon	Highland	1 coil cable ; 1 jointing	7	0	0
,,	,,	Bombs, etc.	3	0	14
Bedford	Midland	Feeding pump motor	6	0	0
Coventry	L. & N.W.	1 case sights and cables	7	0	0
Gosport	L. & S.W.	1 case fuses	1	0	4
Selby	North Eastern	8 cases detonators	1	1	13
Immingham	Great Central	Signals	1	3	2
Aberdeen	Caledonian	1 cylinder torpedo	0	3	6
St. Rudean	,,	Explosives	0	3	2
,,	,,	,,	0	2	0
Westgate	S.E. & C.	1 case, cartridge signals	0	2	13
Killingholme	Great Central	1 case, cartridge signals	0	1	13

In December, 1915, and January, 1916, there were recorded no fewer than 100 examples of railway wagons dispatched from Woolwich with consignments of less than a ton, and, in a large proportion of instances, less than 10 cwts. or even 5 cwts. Many of the consignments may have been urgently needed ; but, apart from the possibility of sending them

by road, when the distance allowed, it would often have been much simpler, more expeditious, and far preferable to have given the package to a messenger to take by train to destination rather than use a railway wagon specially for the purpose, and this, also, at a time when the railway companies were straining every nerve to meet the demand for wagons, and when the cry was raised that "the trade of the country was being crippled through want of railway facilities."

Woolwich, however, was far from being the only offender. Instances of light loading of Government traffic came to hand from all parts of the country. One railway wagon was sent from Patricroft to Barrow with a case of gun mountings, weighing 2 cwts.; another from Purfleet to Catterick Bridge with a barrel of gunpowder, weighing 1 qr., and so on with a large number of examples in which the weight carried per wagon did not exceed 5, 10 or 15 cwts.

All such cases as these, reported to the Control Committee, were at once investigated, the practice usually followed being that close inquiry was made by the representatives of the department concerned, with a view to seeing whether the light loading could not be avoided. These steps were, in some instances, supplemented by a further resort to local conferences between representatives of the Government, the works and the railways. One conference, held at Woolwich Arsenal on February 22nd, 1916, was attended by representatives of the Ministry of Munitions, the Arsenal itself and the South Eastern and Chatham Railway Company. It led to an arrangement that in future consignments of less than one ton should be collected from the military loading sheds by motor wagons and conveyed by road to the London termini of the various railways. This method of collection and conveyance was further extended to the Naval Ordnance. Certain classes of explosives would still have to be carried by rail in weights of less than one ton, but the anticipation was that at least 80 per cent. of the cases of light loading from the Arsenal would be avoided. Action taken in other directions, also, led to assurances being given that every effort should be made to avoid light loading either by the adoption of road transport or, alternatively, by an amalgamation of small consignments, although it was explained—and admitted by all concerned—that it might still be necessary to send small parcels in separate vans in cases of great urgency.

Later Activities of the Control Committee.

While, it is hoped, full justice has been done to the good results which followed from the work done by the Control Committee, the substantial reduction effected did not mean the actual disappearance of the transport troubles with which the committee was concerned. The improvements already effected were mainly relative. They were good in comparison with what had gone before; but they still left conditions which, without reference to the past, called for continued watchfulness and attention.

Thus it has been shown that the earlier returns concerning wagon

detention related to periods exceeding seven days; but with the great increase, early in 1917, in the number of establishments set up by or under the control of the Ministry of Munitions, and with, also, the ever-increasing urgency in the need that the best possible use should be made of such wagons as were available, even a seven-day detention seemed to be unduly long. An arrangement was accordingly made by the Railway Executive Committee for the taking of a census designed to show the number of wagons which, at the close of work on Friday, March 17th, 1917, had then been under load for *three* days or upwards at works controlled by the Ministry of Munitions. The figures obtained gave the position as under:—

Wagons under load from 3 to 6 days	6,853
,, ,, ,, ,, 7 ,, 14 ,, ...	1,391
,, ,, ,, ,, 15 ,, 21 ,, ...	75
,, ,, ,, over 21 days	24
Total for three days or upwards	8,343

In spite, also, of the general improvement, cases in which wagons had been detained under load for from forty to fifty days were still being reported at the end of 1917. Complaints, too, not alone of wagon detention but of light loading, short or unnecessary haulage, cross-working of traffic, misuse of stock, etc., continued to occur, and, although they were far less numerous than before (more especially in proportion as the Ministry of Munitions extended its arrangements in respect to road transport) they still called for close inquiry and often for definite action, apart from all that was done throughout, in individual cases, to facilitate the supply of wagons. In many instances the matters complained of were due to war conditions or circumstances which could not have been avoided or for which no one could be blamed; in others it was reported that they had been "followed up with a view to improvement"; that they had been "taken up, and a recurrence was not anticipated"; that they were "under investigation, with a view to seeing if such occurrences could be avoided," and so on.

The Committee continued its operations after the Armistice; but the work to be done had declined steadily throughout 1918, and in 1919 the cases calling for investigation became fewer and still fewer in number, even if they were not infinitesimal as compared with the days earlier in the war when it was a physical impossibility for the Railway Clearing House officials to deal with them all. The meetings of the committee were now held at less frequent intervals, and at the one on September 17th, 1919, it was decided to recommend to the Railway Executive that the committee should be dissolved, and that any future questions affecting the working of Government traffic should be dealt with by correspondence between the particular Government department and either the railway company concerned or the Railway Executive Committee. This course was adopted.

CHAPTER XXV.

MINISTRY OF MUNITIONS TRANSPORT BRANCH.

HAVING regard to the colossal amount of transport to which the creation of the Ministry of Munitions led, and, also, to the wide range of technical and other questions that naturally arose on such matters as transport facilities, traffic regulation and the working of the munitions traffic generally, it was inevitable that the Ministry should have to arrange at an early stage of its existence for a department especially designed to take charge of these and other kindred subjects and details, thus greatly facilitating the work not only of the Ministry but of the railways.

Starting on a very small scale, the Transport Branch thus formed eventually became—under the directorship for the greater part of its history of Mr. Howard Williams, C.B.E. (appointed in April, 1920, General Manager of the Central Argentine Railway)—an organisation responsible for a wide range of duties, while its operations were destined to have a material bearing on the transport situation, though they were limited by the fact that the functions of the Branch in respect to munitions ceased upon completion of manufacture, at which point the War Office assumed control over the dispatch to final destination.

"C.M.8."

The Branch came into existence on September 15th, 1915. It was created by Mr. Lloyd George, then Minister of Munitions, as a Forwarding and Delivery Department under the Director-General, Munitions Supply, Sir F. W. Black. That gentleman had four sections of his own department, known as "A," "B," "C," and "D," respectively, and each was under the control of a Deputy-Director-General. Mr. Eric Geddes—as the future Minister of Transport then was—had charge of Section "C," and this, in turn, was divided into eight sub-sections. Each was called "C.M.," with a number from 1 to 8 inclusive. "C.M.8." was the said Forwarding and Delivery Department; but for some months it was known only as "C.M.8." Its original staff consisted of four persons. The Director of the sub-section was Lieut.-Colonel, afterwards Brigadier-General, R. L. Wedgewood, Chief Goods Manager of the North Eastern Railway. He was assisted by Mr. Howard Williams—then Mineral Traffic Manager of the London and North Western Railway—who succeeded him as Director when he joined the staff in France of Sir Eric Geddes on the appointment of the latter as Director-General of Military Railways.

The original function of " C.M.8.," as defined by the Director-General, Munitions Supply, was to " communicate with the War Office, the Railway Executive Committee, or with the railway companies direct in reference to all special services required from the railways by the Ministry, such as construction of sidings, special train facilities, requests for special transit arrangements, and, generally, all technical railway matters " ; but the scope of the sub-section's activities began their process of expansion almost at once, and they had undergone a substantial growth even before the end of 1915. By that time " C.M.8." had been actively concerned in, among other things, advising as to lay-out, location, etc., of new sidings on behalf of various sections of the Ministry in conjunction with the railway companies ; choice of location, from a traffic point of view, for munition stores ; issue of priority certificates for urgent Government traffic ; preparations for the Railway Executive Committee of statistics showing prospective amount of munitions traffic to be carried within a given period, and a variety of measures designed to facilitate munitions transport in general. Many other matters of a technical character were also referred to the Branch.

From the beginning of 1916 the general functions of " C.M.8." underwent further expansion. There was every indication of an early and very great increase in the production of munitions, and the question arose as to whether the railways would be equal to the task of conveying them. The Railway Executive Committee replied that no difficulty in handling the increased traffic was anticipated—provided that certain conditions were fulfilled. These conditions included the carrying out of an effective organisation designed to ensure the off-loading of wagons without delay ; the detection, reporting and investigation of cases of misuse and detention of stock in connection with factories and stores ; regulation of the forwarding of traffic ; economical use of wagons ; avoidance of unnecessary haulage, and so on. It became the duty of " C M.8." to take an active part in the fulfilment of these conditions (the carrying out of which, as shown in the previous Chapter, had already been entrusted to a Standing Joint Committee on Supply of Wagons and Control of Government and Contractors' Traffic), and among other measures adopted towards the attainment of this end was the issue, in the name of the Ministry of Munitions, of an extremely practical eight-page pamphlet of " Instructions to Boards of Management, Stores Officers, etc., in regard to Railway Working."

" Munitions Railway Transport Branch."

In February, 1916, there was a change in the designation of " C.M.8." following on a development in the scope of its functions. It now became the " Munitions Railway Transport Branch," and an intimation was given that it would, among other things, deal with questions of road transport generally so far as these affected, or might relieve, rail transport. The organisation at headquarters was further expanded, and, before the

end of May, 1916, sections had been set up as follows: (1) Railway and canal transport; (2) railway transport permits; (3) traffic regulation at factories and stores; (4) railway rates, rules and regulations; (5) sidings and new works; (6) transport of munition workers; (7) road transport; (8) staff, equipment and registry.

The duties undertaken by the first three of these sections were as follows:—

1.—Railway and Canal Transport.

To deal with questions of wagon supply, delay and loss in transit, difficulties arising out of railway congestion, traffic restrictions, etc., and general railway transport matters.

To expedite urgent consignments and to arrange special-train working for traffic of vital importance, exceptional and out-of-gauge loads, etc. To arrange fixed services for regular munitions traffic. To advise Supply Departments, Ministry Establishments and contractors on the transport of their material, best mode of conveyance, routes, etc.

To advise on the utilisation of canals and coastal shipping for the transport of suitable material to the relief of the railways, and to select and encourage the diversion of such traffic from rail; to deal with transit difficulties on inland waterways and all matters affecting the Ministry for the Canal Control Committee.

2.—Railway Transport Permits.

To control the issue of permits giving priority of acceptance and transport on the railways of urgent munitions traffic over civilian traffic; also permits for the conveyance of explosives and other dangerous goods by goods and passenger trains and steamboats.

3.—Traffic Regulation at Factories and Stores.

To secure as far as possible from Ministry establishments, controlled firms, national factories, stores and bonds the most economical use of rolling stock and the prompt release of wagons; to prevent the misuse of wagons, sheets and ropes; to deal with congestion and faulty regulation of traffic at those places with a view to remedies being applied; to investigate cases of unnecessary haulage; to secure as far as possible re-allocation of distribution of material when uneconomical haulage of material is involved, and generally to deal with all questions of railway working arising out of the manufacture, storage and circulation of munitions traffic.

The arrangements made in regard to transport requirements of the various branches of the Ministry varied according to circumstances and conditions. Certain of the branches, such as the Trench Warfare Supply Department, the Department of Explosives Supply, the Mechanical Warfare Department, and the Gun-ammunition Filling Department, had each a transport organisation of its own, subject to submission of matters of principle to the Transport Branch. On certain other branches members of the Munitions Transport Branch staff were located to co-ordinate requirements and deal with matters of detail. In some instances an organisation was set up which applied exclusively to the special needs of one particular department. All other departments of the Ministry not provided for under one or other of these categories approached the Munitions Railway Transport Branch direct whenever they required guidance or assistance in transport matters. Nor was the work of that Branch restricted to departments of the Ministry of Munitions. Before long it became the general friend, adviser and helper

in regard to transport for Government departments in general, as well as for establishments dealing with contracts for any of such departments.

Area Organisation.

In proportion as the manufacture of munitions spread throughout the country, involving multifarious transport questions which called for local inquiries, investigation or treatment, the fact became increasingly evident that a headquarters staff alone would not suffice to meet the necessities of the case. At first there were travelling inspectors who were sent out to inquire into such matters as provision of sidings, acquisition of buildings and sites from railway companies, detention of wagons at national and other establishments, congestion of traffic, supply of wagons, and a great variety of other matters of a kindred type. Then an "Area Transport Officer" was appointed for the Birmingham district, and this new departure was found to be of great advantage, not alone to the Munitions Transport Branch, in facilitating local inquiries and local arrangements, but, also, to the munitions establishments and to the railway companies. Eventually areas and sub-offices were set up as follows: Area No. 1, Newcastle. Sub-office, Middlesbrough. No. 2, Manchester. Sub-offices, Liverpool, Carnforth, and Whitehaven. No. 3, Leeds. Sub-offices, Sheffield and Bradford. No. 4, Birmingham. Sub-offices, Coventry, Nottingham and Lincoln. No. 5, Cardiff. No. 6, Bristol. No. 7, London. Nos. 8 and 9, Glasgow.

The main duties of the Transport Officers in charge of these areas were:—

1. To inform the railway companies as to the respective urgency of different classes of traffic, both in respect of transit and wagon supply, and to issue priority certificates when considered necessary.

2. To deal with the detention of railway companies' wagons, sheets, etc., including the internal user of stock at national factories and stores, and also at contractors' works.

3. To follow up questions of wagon supply and to keep the railway companies advised as to prospective demands, development of munitions traffic, etc.

4. To watch the movement of traffic with the object of preventing unnecessary haulage, wrong routing, light loading, or indiscriminate use of wagons.

5. To look into cases of railway congestion at factories, etc., and confer with the management as necessary for the regulation of traffic or the adoption of any other steps required to remedy the difficulty.

6. To supervise the operation of all motor vehicles in areas under the control of the Ministry of Munitions.

7. To encourage short-distance traffic from rail to road and traffic to the waterways in order to relieve the railway companies and enlarge the wagon supply.

8. To deal generally with points arising out of carriage and other charges made by railway companies, and Railway Clearing House regulations for classification and conveyance of explosives, including also the conditions contained in the Railway Executive Committee pamphlet as to the conveyance of explosives by rail.

9. To advise on technical questions arising out of provision of sidings, suitability of sites for factories or stores from a railway-traffic-working point of view, and other general questions involving technical railway considerations.

10. To submit a weekly report to Headquarters giving a review of the general railway position and of important matters dealt with during the week. Attention to be called in these reports to any special cases of congestion or other difficulty in the area or any other districts affecting the working of the area, other than deck or quay congestion.

11. To keep in close touch throughout with the Area Office, and generally to act, as far as possible, as a connecting link between the Area Office and the railway companies on all railway matters.

Many advantages are claimed to have resulted from the work undertaken by these Munitions Area Transport Officers.

Special and successful efforts, for example, were made to secure the better loading and the earlier release of wagons. Improvements were secured in the rate of discharge at the ports. Much was done with a view to relieving the continued and increasing pressure on the railways by securing the diversion of short-distance traffic from rail to canal or road. In one area alone the transfer to canal of 300,000 tons of traffic which would otherwise have been put on rail was arranged. Munitions Transport Officers sought to effect a greater use of road motors for traffic flowing regularly between given points, and in the case of one firm a saving of 500 railway wagons per week was gained. Road transport in the various areas was under the jurisdiction of the Munitions Transport Officers, and in one of these areas the traffic conveyed between April, 1917, and December, 1918, by lorries belonging to the Ministry amounted to over 787,000 tons. About 143,000 tons consisted of short-distance traffic which had been diverted to the roads in order to relieve the railways. The Munitions Transport Officers were responsible, too, for the working of some of the motor controls established in various parts of the country, and they were especially successful in obtaining the maximum loading and the best use of vehicles. In one instance the officers concerned secured the transport of over 1,000 tons of munitions per week in road motors which otherwise would have run empty in one direction.

Headquarters' Work.

The Branch was constantly on the look out for means by which transport could be saved or facilitated. It was as the result of a suggestion made by the Branch that arrangements were made for testing certain large articles at the place of construction instead of conveying them to another point for this purpose. The result was a saving of 67,829 miles of haulage, with the further advantage to the railway companies that they were in a better position to meet demands for wagons. Economy was obtained in the use of special trucks. Such trucks were being used for the forwarding of certain completed articles; but the Munitions Transport Branch found that, by dispatching the articles in a nearly completed state, involving very little extra work at the base overseas, the traffic could be loaded on ordinary railway wagons. Exceptional steps were taken from January, 1916, to secure the most efficient user of tank wagons, of which the number available

was below war-time requirements. A system of traffic organisation carried out in connection with the Central Stores Department led to the prevention of much wasteful haulage, to the obviating of congestion, to avoidance of detention of wagons, sheets and ropes, and to a better user of the wagons in general. Wasteful haulage it was sought to avoid by drawing up a geographical chart as a means of ensuring the most advantageous storage of materials in the closest proximity to ultimate destinations. A specialised system of loading cartridge cases led to a saving in the case of 18-pdr. cases, for example, of over 6,000 wagon loads per month. Use of returnable boxes necessitating a double journey for the rolling stock was avoided by a system under which the cases could be packed loose and still be carried in perfect safety.

The Munitions Transport Branch initiated and carried through the establishment at the Royal Arsenal, Woolwich, of a Railway Tranship Shed which effected a great improvement in transport conditions there. Between August 23rd, 1917, and July 31st, 1918, the total number of packages dealt with in the shed was over 1,225,000. By the end of December, 1918, the Branch had under its supervision no fewer than 2,054 motor transport vehicles, including petrol lorries, light vans, steam lorries, trailers, light cars, cycles, and cycles with side cars for passengers or goods. The work performed by the fleet during the twelve months ending October, 1918, included: Miles run, loaded, 2,533,001; miles run, empty, 1,958,525; total miles run, 4,491,526; tons carried, 1,903,259; number of loaded journeys, 559,008. The work done by these motor transport vehicles within a radius of from ten to fifteen miles of a number of the principal munition areas in the country, including London, Liverpool, Birmingham, Manchester and the West Riding of Yorkshire, afforded much relief to the railways in respect to short-distance traffic. In the Liverpool district the amount of such traffic carried by Ministry of Munition lorries during the three months ending October, 1918, was nearly 23,000 tons.

The fact that the Branch was taking so active and prominent a part in the development not only of road but of canal transport led to still another change of title in October, 1917, when "Munitions Inland Transport Branch" was substituted for "Munitions Railway Transport Branch."

The staff of four persons with which the Branch started in September, 1915, had increased by November, 1918, to 196. Of these, 84 were members of the Ministry of Munitions staff and 112 had been loaned by various railway companies and the Railway Clearing House.

CHAPTER XXVI.

AN INTER-DEPARTMENTAL COMMITTEE.

The impression will doubtless have been gained from what has been told in Chapter XXIV that the Committee on the Supply of Wagons and Control of Government Traffic had done work of exceptional value and importance in helping to overcome the transport difficulties in regard to detentions and other troubles or abuses which, as it happened, had more especially arisen in connection with the great and ever-increasing volume of munitions traffic.

There nevertheless came from the Ministry of Munitions, early in January, 1917, some complaints—made in quite general terms—as to alleged delays in the handling of munitions traffic (though it was admitted that the railways were not entirely to blame), and the suggestion was made that the Ministry should have direct representation on the Railway Executive, with a view to furthering the interests of munitions transport.

Such direct representation appeared, however, not only inexpedient in itself, but open to objections from other points of view.

It would have meant that a new department which, while doing work of the highest national importance, had already attained to powers of quite exceptional magnitude, and was obviously not averse to obtaining further extensions thereof, would, in turn, have shared in the control of the railways of Great Britain.

Then there were other departments of the State no less interested in the efficient working of the railways than the Ministry of Munitions; but the proposal now made applied only to the last mentioned. Had it been acceded to, the other departments in question might have presented similar claims on their own account; though acceptance of the claim by the Ministry of Munitions would alone have sufficed both to change the constitution of the Railway Executive and to prejudice the very principle on which that body had been established.

The essence of the said principle was that the Executive Committee should be a Committee of Railway Managers—that is to say, of practical railway men—who were to control the operation of the railways taken over by the State and act as intermediaries between the Government and the individual companies. The committee was thus responsible for, among other things, a wide range of technical duties and financial or other interests in which the Ministry had no concern; and an admission that any State department dealing with rail transport was entitled to direct representation on the Railway Executive would have not only

been inconsistent with the policy based on the Act of 1871 but would have led to the Executive itself becoming less efficient in the attainment of the purposes for which it had been formed.

Representation of State departments on a sub-committee specially appointed to deal with traffic questions was a different matter, and, in the opinion of the Railway Executive, the complaints made by the Ministry of Munitions could be adequately met by widening the powers of the Wagon and Control Committee. The President of the Board of Trade favoured, however, a closer co-operation between, on the one hand, all the State departments concerned, and, on the other, the Railway Executive, whose members did not, as a rule, attend the meetings of the Wagon and Control Committee.

Such closer connection, while not involving attendance of departmental representatives at the ordinary meetings of the Railway Executive and the practical conferring on them of the right to have a voice, and otherwise take part, in the general policy and administrative work of that body, would still enable the State departments to deal direct, in regard to traffic questions, with the General Managers instead of with the Goods Managers and Superintendents on the Control Committee. In this way one, at least, of the criticisms understood to have been raised by the Ministry of Munitions would be met.

No objection whatever was offered by the Railway Executive to the modified proposal made by the President of the Board of Trade. The Executive, in fact, not only expressed concurrence therein, but suggested that representatives of the Admiralty, the War Office, the Ministry of Munitions, the Shipping Controller, the Food Controller, and the Port and Transit Executive Committee should meet members of the Railway Executive periodically in order that traffic problems arising from time to time might be fully discussed. The arrangement was one that offered advantages to the Executive Committee and to the railway companies no less than to the State departments themselves. Thus Sir Herbert Walker wrote concerning the proposal :—

> If it led to no other result, it would be of distinct advantage that there should be a better understanding than, perhaps, exists at present on the part of some of the departments of the difficulties under which railway work is carried on at the present time and the need that exists for those concerned either in the forwarding or the receiving of traffic to conduct their business in such a way as to facilitate railway business to the utmost. The representatives of the railway companies also consider that advantages would acrue if the various Government departments conferred with the Railway Executive Committee before embarking on new schemes or proposals affecting railway transport.

The President of the Board of Trade accordingly brought about the formation, on this basis, of what became known as the "Committee of Representatives of Government Departments and of the Railway Executive Committee." It was eventually constituted by representatives of the Admiralty, the War Office, the Board of Agriculture and Fisheries, the Ministry of Munitions, the Ministry of Shipping, the Ministry of

Food, the Port and Transit Executive Committee and the members of the Railway Executive Committee.

The new committee held its initial meeting on March 21st, 1917, at the offices of the Railway Executive Committee, on whose behalf there attended, on that occasion, Sir H. A. Walker (in the chair), Mr. J. A. F. Aspinall, Mr. C. H. Dent, Mr. D. A. Matheson, Mr. F. Potter, Mr. F. Tatlow, Mr. H. W. Thornton, Sir Robert Turnbull, Mr. J. Rostern (for Sir Sam Fay) and Major G. S. Szlumper (Secretary). Sir Herbert Walker welcomed the representatives of the Government departments present and said the committee had been formed at the instigation of the President of the Board of Trade, as Chairman of the Railway Executive Committee, the object being to give an opportunity for discussing fully and frankly the mutual difficulties of the various departments represented in order that the railways, on their part, would be able to do all in their power to aid the departments in the exercise of their functions, and, in return, be assisted by them in the prevention or removal of difficulties which would militate against the efficient working of the railway service. It was hoped that, as the result of the operations of the committee, it would be possible to maintain that close co-operation which was necessary for the prosecution of the war.

Meetings of the committee were held about once a month, or oftener, as occasion required, until July, 1918, when they were discontinued. During this period a wide range of subjects was dealt with, and much useful action was taken.

Essential Food-stuffs.

At the first meeting of the committee there was read a letter from the Director of Munitions Railway Transport suggesting that only the absolute necessaries of life should be brought within the categories of food-stuffs for which preferential transport could be claimed, and that under no circumstances should it be possible for such commodities as ale and stout, confectionery, tinned fruits, sauces or wines to receive priority of acceptance over raw materials or other commodities essential to the manufacture of munitions of war. The time had come, the letter continued, when the various articles comprised in the term "food-stuffs" should be revised with a view to scheduling essentials and non-essentials, the latter being placed in the category of ordinary civilian traffic which was rightly the first to suffer when restrictions were imposed.

Copies of this letter were sent to the Food Controller and the Board of Agriculture with a proposal that each should appoint a representative who would confer with representatives of the railway companies in order that there could be drawn up a classification of non-essential food-stuffs which could, without national detriment, be treated as ordinary civilian traffic. This course was adopted. A list was drawn up by representatives of the Railway Executive Committee, the War Office, the Ministry of Food, the Board of Agriculture and the Ministry of

Munitions, and the railway companies were instructed that, when traffic restrictions became necessary, materials essential to the manufacture of munitions of war were to have priority of transport over the non-essential food-stuffs enumerated in the schedule.

Food Supplies from Ireland.

At the meeting on May 3rd, 1917, the representative of the Ministry of Food, Mr. Austin Taylor, pointed to the fact that, whilst difficulties in the transit of food supplies between Ireland and England were arising as the result of the shortage of steamers, fish from Ireland was not being consigned by all the routes which were available, while, concurrently with such shortage of vessels, a large number of boats trading to Ireland with coal were returning empty, although use might well be made of them for the transport of fish. The suggestion had, Mr. Taylor further said, been made that matters would be helped if a railway officer of general experience could be appointed in Ireland to co-ordinate arrangements with regard to the traffic.

Sir Robert Turnbull (Railway Executive Committee) undertook to nominate for the purpose a railway officer who would be acceptable alike to the English and to the Irish Railway Executives and to the traders, and at a subsequent meeting of the committee it was announced that the Railway Executive Committee, after consultation with the Irish Railway Executive Committee, the Shipping Controller, the Food Controller and the Chief Secretary for Ireland, had appointed Mr. H. G. Burgess, the Irish Manager for the London and North Western Railway Company, to be the officer to co-ordinate the arrangements in regard to the conveyance of fish and other perishable commodities, Government traffic, etc., between Ireland and Great Britain, Mr. Burgess to be known as "Director of Transportation for Cross-Channel Traffic between Ireland and Great Britain." He was to decide, in case of congestion arising, or being likely to arise, as to the sea route by which the aforesaid traffic should pass between Ireland and Great Britain. For the effecting of this purpose he was to be invested with powers, under the authority of the Shipping Controller, to commandeer any non-railway owned boats, and any boats sailing "light"—or space on either description of boat—between Ireland and Great Britain, and to use such boats or space thereon for the conveyance of traffic in order to relieve congestion of fish or other urgent traffic by Short-Sea expeditious routes, it being understood that traffic would not be diverted from its normal route except in cases of emergency. When the classes of vessels named were not sufficient to accommodate traffic between Ireland and Great Britain, the Shipping Controller would, as far as possible, provide shipping. The Director, acting under the authority of the Railway Executive Committee, would be required to keep in close touch with the railway companies on both sides of the Irish Sea in order to make certain that the route by which it was proposed to send the traffic could accept and deal with

it. He was also to keep in close touch with the Shipping Controller, the Food Controller and the Chief Secretary for Ireland.

It was on this basis that the traffic was thenceforward organised until the return of normal conditions.

Home-Grown Fruit.

There was an expectation in the early summer of 1917 that difficulties would arise in the collection, distribution and marketing of home-grown fruit owing to lack of proper organisation for dealing with small quantities received from the growers, and it was reported to the Committee of Representatives that an inter-departmental committee would probably be formed to deal with the home-grown fruit question as a whole, the adoption of this course being regarded as the more desirable in view of the prospective imposing of restrictions on the importation of foreign fruit. Thereupon it was intimated that, if such a committee were formed, the railway companies would be willing to appoint a representative upon it.

Later on the Food Controller called attention to some complaints he had heard at a meeting of fruit-growers, on the ground that railway companies would not receive for consignment less than truck loads of fruit. To this the railway members on the committee replied that such a restriction was necessary on account of the shortage in the supply of trucks, and that the remedy was to be found in co-operation among the growers for the provision of consignments in full truck loads.

After this there were complaints of undue delays in the delivery of fruit at the markets; and here the reply given was that having regard to the large amount of fruit conveyed over the railways, it was impossible to deliver all the consignments in the early hours of the morning; that the railway companies were greatly hampered owing to the excessive detention of delivery vans at the markets; that the position would be greatly improved if only the growers would follow the advice given to them by the President of the Board of Agriculture in a leaflet he had recently issued on the subject, and that Covent Garden market was wholly unsuited to modern conditions.

Then there was a conference between representatives of the Ministry of Food, the Board of Agriculture and the South Eastern and Chatham Railway Company at which various proposals were put forward, and finally it was announced that the Ministry of Food had appointed a committee "to inquire into and report upon the conditions of the fruit and vegetable markets within the Metropolitan Police District of London, and to recommend any measures that, in the opinion of the committee, would tend to relieve congestion and prevent waste of food in the markets, and would conduce to the more rapid and efficient handling of the fruit and vegetable produce marketed in London." Mr. Marriott, Goods Manager, Lancashire and Yorkshire Railway, was to represent the railways on this committee.

Traffic Questions.

Many matters akin to those dealt with by the Supply of Wagons and Control of Government Traffic Committee also came before the Committee of Representatives of Government Departments and the Railway Executive Committee. This was especially the case in regard to instances of unnecessary haulage, suggesting abuse of the wagon resources of the country.

One complaint brought forward under this head by the railway representatives related to the tea traffic. Tea previously coming by sea to London had been diverted to Liverpool, whence it was brought by rail to London for, it was said, the purposes of storage, and it was subsequently distributed therefrom to all parts of the country although ample storage accommodation was available at Liverpool. It was regarded as obviously desirable to save any unnecessary haulage as between Liverpool and London.

An explanation offered by the representative of the Ministry of Shipping was to the effect that London was the only place in the country which then possessed the necessary machinery for the blending of tea—a fact that gave rise to the need for so much of the imported tea to be brought on to London. All the same, it was promised that the matter should be looked into. A month later the committee were informed that, as the outcome of a conference brought about by the Port and Transit Executive Committee, it had been arranged that 50 per cent. of the imported tea should be shipped direct to London and that the remaining 50 per cent. should be landed at Liverpool, Manchester or Glasgow, at which ports endeavours would be made to provide for the blending to be done locally. The distribution of the tea would then take place, from London in respect to places south of a line drawn east and west through Birmingham, and from Liverpool, Manchester and Glasgow in respect to places north of that line.

This arrangement appeared to be a satisfactory one; but three months later it was reported that consignments of tea considerably in excess, in the aggregate, of the allotted 50 per cent. were being sent from Liverpool and Manchester to London, while between December 10th, 1917, and January 7th, 1918, there were dispatched from one London terminus 366 consignments, or 2,691 chests, of tea to stations north of the aforesaid line, included therein being 141 consignments, representing 1,411 chests, of tea which were going to Liverpool or Manchester, from which ports some of that very tea had already been forwarded to London.

Another complaint which the railway representatives had to make was that, although the camp of the American Army in England was adjacent to a thoroughly well-equipped port in one part of the country, many of the troops were being landed at another port which was 270 miles distant from it. This arrangement was shown to be due to the submarine trouble; but the railway representatives, though having to yield on the one point, were able to show that there was being thrown

on the railways a considerable amount of work which might, at least, be reduced. During the previous week-end there had been provided eleven special trains for the conveyance to the south of American troops who were to arrive at the northern port in question; but there was some uncertainty as to when the vessel would arrive, and the trains had to be kept standing for several days in order that they might be ready whenever they were wanted. Such detentions of rolling stock would, it was suggested, be rendered unnecessary if there were set up, near to the arrival port, rest camps which would allow of a regular traffic over the railways being maintained. The War Office promised to look into the question, and the recommendation was afterwards acted upon.

Still another railway complaint referred to unnecessary mileage in the running of ambulance trains. Occasion had arisen for the transfer of some wounded sailors from Avonmouth to Gosport, and, in order to provide for their removal, a naval ambulance train had been sent for from Thurso, in the extreme north of Scotland, to make this journey in the extreme south of England. This meant that the train travelled empty, first from Thurso to Avonmouth, and then back from Gosport to Thurso—a procedure which entailed light mileage for a distance of over 1,200 miles and might have been avoided by previous consultation between the Admiralty and the railway companies. That an error had been committed was, in effect, admitted by the Admiralty representative, who gave an assurance that "the matter had been suitably dealt with."

It was, however, naturally the wish and purpose of the railway companies to prevent such "matters" from arising at all, and the new committee served as useful a purpose for the ventilation of their own grievances against the State departments as it did for the bringing forward of those of the said departments against the railways.

In respect, again, to short-distance traffic, the railway representatives were able to impress upon the representatives of the Ministry of Munitions the expediency of sending such traffic by road instead of by rail, as, for instance, in the case of traffic between Liverpool and Aintree or Fazakerley.

Wagons and Locomotives.

Attention was naturally called from time to time to the question of wagon supply, and in the autumn of 1917 Sir Ernest Moir, on behalf of the Ministry of Munitions, impressed upon the committee the gravity of the situation that was likely to arise during the ensuing winter owing to the prospective enormous increase in the production of munitions of war; the greater demands which would follow thereon for wagons and locomotives; the probable inability of running lines and terminals to accommodate all the traffic that would require to be dealt with; the limited man-power available for repairs and renewals and the inability

of the companies to obtain adequate supplies of material for maintenance or renewal of permanent-way and rolling stock.

These conditions had already been fully realised by the Railway Executive, and the Committee of Representatives was informed that a memorandum setting out the urgent need for ensuring to the railway companies the supply of the necessary materials for construction, maintenance and upkeep of locomotives, rolling stock or permanent-way would be prepared for presentation to the Cabinet.

At the next meeting, in November, 1917, it was reported that a memorandum had been submitted to the President of the Board of Trade; that there had been a meeting between the President, the Ministry of Munitions and representatives of the railways; that a further meeting had been arranged, and that, if it were found impossible to meet the requirements of the railways without depleting the supplies already promised to other departments, the matter would be referred to the War Cabinet.

Meanwhile the idea had occurred to the railway companies that the Ministry of Munitions might be able to render them some assistance in regard to the wagon-shortage difficulty.

In the early part of 1917 the Coal Controller commandeered 2,145 wagons and handed them over to the Ministry of Munitions for the conveyance of iron ore; but, towards the end of the year, it was pointed out to the Committee of Representatives that full use was not being made of these wagons, and that if they were handed over to the railway companies they would assist the wagon supply generally, reduce the amount of empty haulage, and save much of the shunting that had to be resorted to, while, on the other hand, the railway companies would be able to supply all the wagons needed for dealing with the iron ore. In this way greater and more general use would be made of the wagons, and less risk would arise of their remaining in a state of inactivity at times when it would be of great advantage that they should be fully employed. It was replied, however, on behalf of the Ministry of Munitions, that the Steel Department of the Ministry considered it imperative they should have the handling of the wagons in order that a certain number could be kept under load at the steel-works to provide against temporary dislocation of the traffic, and, also, in order that the flow of wagons could be regulated to meet the wants of the department.

Unable to adopt the views of the railway companies in regard to the user of wagons, the Ministry of Munitions nevertheless sought to secure the adoption of their own views concerning locomotives. A list of the engine requirements of the companies, laid before the committee, was criticised by the representatives of the Ministry on the ground that there was too great a variety in the list, and that the different types should be standardised; but the answer made thereto was to the effect that different companies required to have engines for different purposes, and that it would be impossible to devise one engine which would serve all requirements in respect to passenger engines, shunting engines, tender

engines, tank engines, heavy goods-engines, light goods-engines, and so on.

Later on the Ministry of Munitions made a proposal that they should arrange for the construction of certain standardised types of engines which could be bought by railway companies desirous of obtaining them. The object of the Ministry, it was stated, was to keep outside locomotive builders employed, in the interests of the country, after the war. It was replied that in Great Britain locomotive shops were necessary adjuncts to the railways from a repair point of view, and that, inasmuch as the railway companies had expended capital on their construction and equipment, it would not be reasonable to put into operation any scheme which would cause them to fall into desuetude.

The foregoing are examples of the many subjects discussed by this very useful committee under conditions which saved much time and correspondence, developed still further the principle of co-operation between State officials and railway companies, and helped to smooth out various difficulties that might otherwise have hampered still further the working both of Government and of civilian traffic.

CHAPTER XXVII.

TRANSPORT WORKERS' BATTALIONS.

Of the various problems which faced the Port and Transit Executive Committee from the date of its creation by Mr. Asquith in November, 1915, for the purpose of inquiring into the difficulties which had arisen in regard to the flow of traffic through the harbours, ports and docks of the United Kingdom and of finding remedies for the congestion consequent thereon, the most urgent of all was that which related to the securing of adequate labour in order to provide alike for the shortage due to enlistments and for the abnormal conditions of the traffic situation generally.

As a means of overcoming this difficulty, of speeding up the discharge and loading of ships, of minimising delays and of securing a maximum carrying power out of the diminished shipping tonnage available, the committee laid before the Government a scheme by which men in the Home Army, and then under training, who had been dockers or otherwise employed in transport work in their civilian life, would be formed into "Transport Workers' Battalions" which, having the status of military units and subject to military law and discipline, would be available for work on the loading, discharging and handling of traffic in the docks, wharves, etc., of certain scheduled ports of the United Kingdom at which periodical shortages of civilian labour were likely to be experienced. They would supplement, though at no time supplant, such civilian labour, being put on only when the necessity arose; they would receive full civilian rates of pay, and they would return to their military training when they were not required at the ports.

Under these conditions the organisation was designed to serve a double purpose; the enlistment of more men for the Army would not be hampered, while from Battalions to be kept in the country men would be re-grouped into specified Transport Workers' Battalions forming a "pool" from which fluctuations in the local supply of civilian labour for work at the ports could be met, the members of such Battalions remaining, however, at all times available—in the discharge of their primary duty as soldiers—for the purposes of national defence.

Credit for the initiation of the scheme is to be given to Colonel T. H. Hawkins, C.M.G., who, representing the Admiralty, was one of the original members of the Port and Transit Executive Committee, and, on the sanction of the Government to the formation of the Battalions being given in March, 1916, devoted himself with unremitting ardour to the success of the undertaking.

By November, 1916, the number of men enrolled was 1,345, and they were found to be rendering such good service that the War Office authorised substantial increases from time to time in the strength of the organisation.

In January, 1917, there were thirty-six scheduled ports (including London, Liverpool, Glasgow, Manchester, Cardiff, Barrow, Hull, Immingham, Grimsby, and Bristol) at which the services of the Battalions were available. In each of them there was set up by the Port and Transit Executive Committee a local committee to which written applications for the assistance of men belonging to the Battalions were to be addressed, and it was left to such local committee to decide whether or not there was such deficiency in civilian labour as would justify compliance with the requests made. These local committees consisted of a naval officer, a military officer, one representative of the Port Authority and one representative of Labour nominated by the port workers.

On March 21st, 1917, Sir Norman Hill (Port and Transit Executive Committee) brought before the Committee of Representatives of Government Departments and the Railway Executive Committee a proposal designed to effect a material expansion in the usefulness of the Battalions.

Experience, Sir Norman said, had clearly established the fact that much of the delay in the turning round of ships at the ports had been due to the inability of traders to unload promptly the import traffic consigned to them, and it had been arranged that, in such circumstances, the services of the Transport Workers' Battalions could be utilised by the consignees for the purposes in question. Would it not be as well, he suggested, that similar steps should be taken to assist consignees in inland towns to deal with their traffic when they found themselves in a like position?

This proposal met with cordial approval from the railway interests, and, in consultation with the Railway Executive Committee, the Port and Transit Executive Committee outlined a scheme the essential feature of which was the provision of a mobile body of transport workers whose movements would be elastic and readily adaptable, thus rendering possible the furnishing of labour—subject to certain conditions—where and when required. The scheme further provided that, in any town in which the making of arrangements for obtaining this labour in case of need might be regarded as necessary, there should be set up a local committee comprising (*a*) one representative of the War Office, (*b*) one representative of the Railway Executive Committee, and (*c*) one representative of Labour. The duties of the local committee would be to inquire into all applications received; to decide whether or not there was a local shortage of civilian labour, and, if it were found that a shortage did exist, to make a requisition upon the nearest Transport Workers' Battalion for a stated number of men. These men would be distributed day by day among the firms or railway premises requiring their assistance, it being thought that the distribution could best be effected by a daily provision for meeting railway and trading needs.

The men were to receive from the firm or the railway company concerned the standard rate of pay applying to workers in similar positions, and they were to make their own arrangements for billeting, etc. They would return to their depôt on being no longer required or on being recalled by the military authorities.

At the next meeting of the Committee of Representatives (April 12th, 1917) it was decided to submit to the War Cabinet for approval a minute drawn up by Sir Norman Hill to the following effect :—

> The Port and Transit Executive Committee to be advised that the men of the Transport Workers' Battalions are available for work in private sidings and on railway premises, provided that the Battalions be used only on railway premises with the concurrence of the Railway Executive Committee.

It was further agreed that, if the War Cabinet approved of this minute, use of the Battalions for the purpose of inland work should, in the first instance, be made experimentally at Sheffield.

Approval of the scheme was accorded by the War Cabinet in May, and operations were set up forthwith at Sheffield, the District Goods Manager of the Great Central Railway Company being appointed chairman of the local committee. So encouraging were the results that shortly afterwards assistance in a like direction was sought by traders in Bradford, where a local committee was formed with the Great Northern Railway Company's District Goods Manager at Leeds as chairman.

These initial experiments were found very satisfactory. Valuable services were rendered alike to the railway companies and to the traders, no fewer than 73,456 wagons, representing an approximate tonnage of 652,000 tons, being dealt with in the two districts in question. So, towards the end of June, 1917, the Goods Managers' Sub-Committee of the Railway Executive was asked to prepare a list of the inland places throughout the country at which it was considered the services of the Battalions might be usefully employed in the near future.

For the full development of the scheme, Great Britain was eventually divided into fifty-two areas, each of which had its local committee, with a railway representative—Goods Manager, Traffic Manager, District Goods Manager, District Traffic Superintendent, Divisional Commercial Superintendent, or otherwise—as chairman. To facilitate the supply of men—the dominant factor being proximity to areas of demand—eight distributing depôts were set up, the centres selected for the purpose being Croydon, Paisley, Motherwell, Southampton, Swindon, Bebington (Cheshire), Prescot (Lancashire), and Catterick Camp (Yorks).

In a pamphlet issued by the Port and Transit Executive Committee in March, 1918, concerning the arrangements applicable to railway work it was said :—

> The railways have sent large quantities of their rolling stock and other equipment overseas, in order to meet military requirements. It becomes imperative that the deficiency in stock thus created should be met by an increase in the number of journeys made by the wagons still available, and it is an urgent national necessity

that the loading and discharging of wagons be carried out with the utmost celerity in order that the railway services may be maintained in full efficiency.

No trade custom or practice regulating the rate of loading or discharge must be allowed to interfere with obtaining the utmost possible dispatch.

All railway wagons must be discharged or loaded promptly.

There must be a general *speeding up* of the work.

After stating that the question as to whether or not there was a deficiency of civilian labour in a district would be decided by the local committee, the pamphlet continued :—

In judging whether there is a deficiency, no hard-and-fast scale for either loading or discharge can be laid down ; a rate which was deemed satisfactory in times of peace cannot be taken as limiting that which is possible, and should be obtained, in time of war. Any trader failing to exercise the utmost dispatch in loading or discharging wagons impedes the transport service of the country upon which the proper conduct of the war so largely depends ; and further than this, he is causing a wastage of carrying power which reacts upon himself and traders generally.

The Port and Transit Executive Committee have no control over rates of pay or conditions of work, as between employers and their workmen, but if disputes and difficulties arise on these points they must be dealt with without interfering with the flow of traffic.

The local committee must act promptly when occasion arises. It is neither necessary nor desirable to postpone obtaining help from the Battalions until there is congestion. The blocking of the railways and private sidings and the detention of railway wagons under load, and the resulting delays, must be avoided.

It must be clearly recognised that it is only inability or failure on the part of civilian labour to handle effectively and promptly the traffic which will justify the withdrawal of the men of the Transport Workers' Battalions from their military duties.

The pamphlet further detailed the conditions under which the Transport Workers' Battalions could be employed. Some of these conditions have been stated above, but the following might be added :—

The men of the Transport Workers' Battalion must be employed only in the actual work of loading or discharging railway trucks—by this is meant the transfer of material directly between the trucks and—

(*a*) the ordinary place of stowage (i.e., the place which is customarily used for the reception of material direct from trucks, or from which material is customarily transferred direct to trucks), or

(*b*) the usual appliances, such as road vehicles, corves, transporters, etc.

The men are not to be used for any work which is solely for convenience from the manufacturing point of view, even although such work may be of national importance.

An application should not be made for men unless there are reasonable grounds for anticipating that the shortage of civilian labour in the district will continue for a period of at least five days.

Under an Army Council Instruction, dated April 25th, 1917, authority was given for the services of Transport Workers' Battalions to be made use of for work on canals. A certain amount of work was also done in connection with agriculture.

The establishment ultimately sanctioned was one of thirteen Battalions, comprising ninety-three Companies, with a personnel of

20,493, all ranks. On the signing of the Armistice, however, no advance was made beyond the twelve Battalions, with a personnel of over 18,000, which had then been formed. The twelve Battalions were afterwards amalgamated into six, and these were finally disbanded in the summer of 1919.

During the operation of the scheme, from March, 1916, to the end of May, 1919, the grand total of traffic handled by the Battalions was 27,341,000 tons, and the aggregate number of days' work done by the men was 5,712,200, distributed as follows: Ports, 4,633,162; railways, 241,582; munition works, ironworks, etc., 441,935; canals, 357,570, and agriculture, 37,951. The total in respect to ports included: Glasgow, 554,500 days; Manchester, 507,600; Liverpool and Birkenhead, 450,000; Newhaven, 407,000; London, 394,000; Southampton, 391,000, and Middlesbrough, 351,000; while among the places at which railway work was done were: Sheffield, 116,000 days; Didcot, 21,000; Horbury, 14,000; Selby, 7,135; Reading, 5,726; Thornbury, 5,238; and so on down to nine days at Canterbury. Altogether the Battalions did railway work in sixty-one different towns or places throughout Great Britain.

Nearly 3,000 of the men were employed at one time in connection with the arrival of American troops at the Liverpool docks in 1918. At Newhaven about 1,000 were employed daily during 1917 in connection with the shipment of munitions and stores for France. Some of the ports employed large bodies of the men permanently to meet the deficiency in civilian labour.

In the first instance it was designed, as indicated above, to form the Battalions exclusively of dockers or of men who had followed kindred occupations; but in practice it was found that, under the direction of those already experienced in dock work, any man physically fit and otherwise suitable could rapidly acquire the necessary skill. Eventually, in fact, the number of civil occupations to which members of the Battalions belonged was over 300. General labourers and dock labourers were naturally in the largest proportion, there being 4,269 of the former and 3,873 of the latter; but the following figures will suggest the wide range of trades, occupations and even professions included in the list: Clerks and cashiers, 665; carmen, 594; stevedores, 230; coal trimmers, etc., 180; miners, 179; printers, 135; gardeners, 132; shop assistants, 108; grocers, 102; carpenters and wood workers, 98; railwaymen, 72; commercial travellers, 51; hairdressers, 39; civil servants, 12; policemen, 9; chemists, 8; draughtsmen, 8; publicans, 8; dentists, 6; wine merchants, 5; music-hall artists, 3; valets, 3; artists, 2; shorthand writers, 2; and one each of the following: Barrister, auctioneer, theatre proprietor, station-master, tea broker, spirit merchant, pawnbroker, jockey, footballer and gravedigger. Of men in Medical Category A the proportion was no more than 7·7 per cent. The majority were in either Bi or Bii, the numbers in these two categories constituting 27·83 per cent. and 58·2 per cent. respectively.

There was much variety in the requisitions made for the services of the workers. They were asked for, among other things, to repair sea defences, pack flour, break ice on canals, repair canal boats, make crushed-metal roads, and, during the influenza epidemic of 1918, to make coffins and act as gravediggers. Testimony was offered, also, in every direction as to the satisfactory way in which they accomplished the work they undertook, while their civil earnings amounted in the aggregate to over £2,069,000. The relations between the Battalions and the ordinary civilian labourers with whom they worked were at all times excellent.

As regards the application of the scheme to inland towns, one may safely affirm that it helped materially in the avoidance of congestion and detention on the railway lines and in private sidings; served to increase the mobility of rolling stock; facilitated the meeting of urgent military requirements; ensured the better handling of the increased volumes of raw materials necessitated by the greater output of munition factories; made provision for the irregular arrival of cargoes which could not be held up at the ports of discharge, and conferred other benefits, in addition, all tending to promote the successful prosecution of the war.

Concerning the work of the Battalions as a whole, it is said in "The War Cabinet: Report for the Year 1918":—

> This work has been of the greatest assistance in maintaining the flow of traffic at the ports of the country, and it has been done with the most cordial co-operation of civilian labour. The help from the Battalions has again and again prevented blocks and resultant losses in the carrying power of ships, railway wagons and canal barges.

CHAPTER XXVIII.

ENLISTMENT OF RAILWAYMEN.

WITHIN eleven days of the declaration of war, 27,600 railwaymen had either been called up, as Reservists or Territorials, or had left the railway service to join the Army or Navy as volunteers.

The position on two of the principal lines about the middle of September, 1914, may be shown thus :—

COMPANY.	RESERVISTS.		TERRITORIALS.	ENLISTED.	TOTAL.
	Army.	Navy.			
London & North Western	2,328	308	2,532	4,096	9,265
Great Western . . .	1,823	265	2,050	3,455	7,593

Of those who had gone from the Great Western, no fewer than 3,458 belonged to the Locomotive Department.

In the case of twelve of the leading companies, 44,337 had joined up by the end of September, 1914, and this figure was increased to over 58,000 by the end of the year.

The railway companies had naturally reckoned on losing—temporarily, at least—the services of Reservists and Territorials ; and one of the first things done, in this connection, by the Railway Executive Committee was to announce, on August 12th, 1914, that—

The railway companies have arranged to keep open positions for Reservists and Territorials who have joined the Colours. The companies will also make allowance to the families during the time the men are absent from their homes, and will, when necessary, pay the subscription to the companies' superannuation and provident funds.

On August 27th this announcement was supplemented by the following further notice :—

We are authorised to state with regard to Army Reservists in railway service who have joined the Colours, the railway companies have arranged to supplement the Army pay and allowances in such a manner that the families will be maintained in circumstances which should avoid hardship during the absence of the breadwinner of the family. Occupants of the companies' houses will not be disturbed. This also applies to the families of Naval Reservists and volunteers.

In addition, on the return of the men from active service, positions will be found for them on the railways equal to those they formerly occupied. If through any oversight any family finds itself in want of assistance, the attention of the railway company concerned should be at once called to the case.

While, however, regarding the departure of Reservists and Territorials as inevitable, the companies were not at first prepared for a further substantial depletion of their staffs through the "rush," at that time, for enlistment. With every prospect of great demands being made in regard to military traffic, and having in view the vital importance, in many ways, of the rôle which the railways were to play in the emergency that had arisen, it was thought material to the national interests that the efficiency of the railway working should be maintained.

Accordingly there was sent to the War Office, on September 4th, 1914, by the Railway Executive Committee, a communication in which it was said that, owing to the great impetus given to recruiting during the past few weeks, a considerable number of railwaymen had left their employment to join the Forces, and this movement had assumed such large proportions that the time had come when some steps must be taken to control it, as otherwise the efficient working of the railways would be seriously impaired. The railwayman who was really wanted for the railway service was, the Committee declared, serving his country just as thoroughly by remaining in that service as by joining the Forces. In these circumstances the railway companies proposed to inform their staffs that any man who wished to leave their service must first obtain the consent in writing of the head of his department; and it was asked if the War Office would issue an instruction to all recruiting officers and recruiting agencies informing them that no railwayman was to be accepted for service with the Colours unless he was able to present a written certificate from the company in whose employ he was, concurring in his enlistment.

A few days later, the War Office sent out the following instruction to recruiting officers and agencies:—

> When candidates for enlistment are men employed by railway companies or by armament or food-producing companies, they should not be accepted by the recruiting officers unless they bring a certificate from the company concerned that their services can be spared.

A notification was nevertheless given to their staffs by the railway companies that "whenever it is possible to do so without impairing the efficiency of the working of the railway, permission to enlist will be given upon application being made to the head of the department."

Enlistments on this basis proceeded at so steady a pace (though one not so great as before) that in January, 1915, the total number of railwaymen who had then joined the Forces was about 70,000. Included therein were 10,725 from the London and North Western; 9,360 from the Great Western; 8,000 from the Midland; 5,930 from the North Eastern, and 3,608 from the Lancashire and Yorkshire.

When the total of 70,000 was reached, it was thought that this was the "highest possible" in the way of a railway contribution alike to the original Expeditionary Force and to Lord Kitchener's new armies. Not only was there still no idea that such great numbers of men would be required as were eventually found indispensable, but doubts were

felt as to whether, if more men were withdrawn from the railways, a sufficient number of others, adequately trained and capable of taking their place, could be procured.

A Railwaymen-Enlistment Scheme.

Such was the need for more recruits that in February, 1915, Lord Kitchener proposed the withdrawal of the earlier instruction to recruiting officers that railwaymen should not be accepted for enlistment unless they produced a certificate from the head of their department stating that their services could be dispensed with. On being informed, however, by Sir Herbert Walker, in the course of an interview, of the prejudicial effect which the proposed withdrawal would have on the efficiency of railway working, Lord Kitchener agreed that the instruction should remain in force, while the Railway Executive Committee gave an undertaking that the companies should be invited to formulate a scheme designed (1) to lay down the lowest number of men required for the efficient working of their lines; (2) to state what proportion of their men in the various grades were suitable for military service, and (3) to ascertain how many of those between eighteen and forty-five could be replaced by youths under eighteen, by men over forty-five, or by women. It was also understood that the War Office would take action to prevent the enlistment of men who were essential to the working of the lines, while the railway companies were asked, by a Railway Executive Instruction issued March 22nd, not to engage any new men between eighteen and forty years of age unless satisfied that such men were unsuitable for military service. The Executive Committee further appointed a sub-committee to deal alike with the information to be obtained from the companies and with the whole question of releasing men for enlistment in the Army.

The sub-committee consisted of Mr. F. Potter (Great Western), Mr. Guy Calthrop (London and North Western), Mr. W. Forbes (London, Brighton and South Coast), Mr. H. W. Thornton (Great Eastern), Mr. D. A. Matheson (Caledonian), and Mr. A. Watson (Lancashire and Yorkshire). It first met on March 24th, 1915, when Mr. Potter, who acted as chairman, read a memorandum in which the general position of the railway companies, at that time, in regard to the matters at issue was explained. Various measures, it was pointed out, had already been taken to reduce the passenger services, as a means of releasing more men; the suspension of restaurant cars was under consideration, and it was proposed to reduce the number of railway porters, the public being notified that they would be expected to carry their own luggage. The question of how to persuade the naval and military authorities to reduce to a minimum their demands on the railways would have to be discussed with the Government departments, and it was suggested that the Executive Committee should request the railway companies to furnish particulars of wasteful or unnecessary demands made upon them in connection with the transport of munitions, etc.

Another subject dealt with in the memorandum was the possibility of releasing staff through a closer co-operation between the railways, by combining resources wherever possible and by abolishing all competitive work. There were still numerous instances in which men were employed for competitive reasons, as, for example, duplicate cartage establishments at various points; separate booking-office and parcels-office staffs at many joint stations; and a certain amount of surviving duplication of services. Staff economy, it was suggested, should be possible wherever two or more companies served the same place, either by closing or partially closing one station, by pooling all resources for the collection and delivery of goods, or by one company undertaking maintenance work for the other.

The memorandum also dealt with the steps to be taken by individual companies to release men by the abolition of unnecessary work, the suspension of work which could be held over, and the securing of closer co-operation between departments. On this branch of the subject Mr. Potter suggested for consideration a number of possible measures, among which were the following :—

Combination of goods and parcels delivery service at certain stations.

Execution of work by one department for others.

The employment of women to be materially extended, e.g., in booking, parcels, goods and weighbridge offices; as travelling ticket-examiners, ticket-collectors, messengers or dining-car waitresses; the working of light machines in factories; cleaning work at stations, carriage cleaning, etc.

Saving of clerical work by the elimination of unnecessary reports and certain statistical returns.

Extension of hours of duty of clerical staff in large offices.

Reduction of hours for the collection and delivery of goods, thus facilitating work at goods stations.

Curtailment of maintenance work.

Suspension of relaying and signal-renewal programmes.

Reduction of the amount of painting work by companies and contractors' men, and the employment of local contractors for small repairs and renewals in order to save time lost in travelling.

Curtailment or suspension of road-motor passenger services.

As the result of their deliberations, the sub-committee decided to recommend that each railway company should review every case of refusal of permission to enlist with a view to seeing whether such refusal—in the individual cases concerned—could now be removed; that each company should also consider the duties of the whole of its staff, so as to determine the number of salaried and wages men respectively who could be liberated for enlistment, if they applied for permission; and that all railway departments should see how far they could take measures to spare more clerks for enlistment.

These proposals were approved by the Executive Committee, and a communication based upon them was addressed to the controlled companies, who were invited to consider whether, by the adoption of some such measures as those with which the sub-committee had dealt, the business of their railway could not be carried on with a still smaller number

of men than were then being employed. While the companies had already afforded facilities to a very substantial extent for the enlistment of railwaymen, a recent return showed that there were still over 250,000 men of military age engaged on the railways of the country, and pressure, it was suggested, would doubtless be brought to bear on the companies to release a proportion of this number.

Immediate action was taken in order to provide such substitution, or to ensure such economy of labour, as would allow of a large number of men being set free to join the Forces.

At a time when their employment in the making of munitions and in a wide range of other war activities was scarcely even projected, women now established themselves on the railway as booking clerks, ticket collectors, dining-car waitresses, carriage-cleaners, engine-cleaners, and in other hitherto unusual capacities, apart from their employment on clerical work to a far greater extent than before. Then, also, it was reported at the next meeting of the Enlistment Sub-Committee (March 30th, 1915), that, in addition to the measures already recorded as offering scope for the reduction of railway staffs or the setting free of men of military age, certain companies were, among other things, appointing lads to adult posts at an earlier age than formerly; taking on men up to fifty years of age; closing intermediate signal boxes on sections of lines not being used by troop trains; reviewing their medical standards in order to widen the field for employment of men who were ineligible for military service; closing receiving and parcels offices, when practicable, or restricting the hours thereof; extending the hours of duty of platform staff; dispensing with van-guards where possible, and discontinuing the outside cleaning of carriages.

Of instances in which railwaymen had applied for permission to enlist and had been refused, on the ground that their services could not be spared, the total number down to March 1st, 1915, was 6,720. A review of these cases, in accordance with the recommendation made, led to the refusal being withdrawn in 1,869 of them.

The general position of the railways in April, 1915, in regard to recruiting was that, taking the whole of the companies, 72,000 of the staff employed at the outbreak of the war had joined the Forces. Taking thirteen of the controlled companies employing, in the aggregate, 90 per cent. of the sum total of railwaymen, the number of their employees on August 1st, 1914, was 625,723, of whom 68,627 had now joined the Colours.

By this time, also, some thousands of railwaymen had been provided for service abroad in Construction, Transport and similar military Companies, and further demands were being made upon them in respect to the formation of Operating Companies. In the railway workshops about 5,000 skilled mechanics and artisans—apart from labourers—were mainly occupied upon military manufactures. Concurrently with this material reduction in their available staffs, the railways had been called upon to handle, during the previous eight or nine months, an amount of traffic in excess of that for any previous corresponding period.

In their efforts alike to meet the traffic situation thus brought about and to free as many men as possible for the purposes of enlistment, some of the companies had closed a number of stations, branch lines and offices, and had, also, materially reduced their services, the reduction in train mileage effected by one of the larger companies amounting to 12,000 miles per day. The railways were taking on no fresh men of military age where this could be avoided, and were reducing work wherever practicable; but, although the companies were fully prepared to continue their efforts to release as many of their employees as possible, the Executive Committee let it be clearly understood that the withdrawal of any further considerable number of men from the railway service could only be carried out by closing more stations, running fewer trains and reducing traffic facilities generally, if not, also, by curtailing the ability of the railways to respond fully and efficiently to the increasing needs of the Government, more especially in regard to the transport of war manufactures.

In effect, it was felt that the railways were coming within measurable distance of the time when, in order to meet the requirements of a national emergency, there would need to be a curtailment of transport facilities on such a scale, and involving, possibly, so great a degree of inconvenience to the public, that the responsibility for the adoption of this course would have to be assumed by the Government rather than by the railway managers themselves.

National Service.

Meanwhile the need for taking adequate steps to ensure the efficient working of the railways of the country was being specially emphasised by the movement in favour of national service.

The principle on which this movement was based had for some years been strenuously advocated by the late Field-Marshal Earl Roberts, President of the National Service League, and a large body of adherents. It was, in effect, that the defence of the country should rest as an equal obligation on all its citizens; that there should be a National Militia formed on the Swiss model; that all youths should be required to pass through a period of military training, and that, on his attainment of military age, every able-bodied man should be liable to be called out for home defence.

With the substantial falling off in the earlier rush of recruits for the Army, the growing need for men at the Front, and the certainty that the war would be of much longer duration and involve a far greater strain on the national resources than had been anticipated, the substitution of compulsory for voluntary service became a subject of active controversy.

What was now specially advocated was that the Government should take measures to organise the full and entire resources of the nation with a view alike to the reinforcement of the Army in the Field and to the production at home of a greater output of munitions of war.

To the railway managers this foreshadowed the possibility of men

whose retention was essential to the working of the railways being diverted to other than railway work; and in May, 1915, the Executive Committee referred to its Enlistment Sub-Committee the question as to the means by which the companies, while co-operating with the Government for the attainment of the dual purposes understood to be in view, could still ensure the efficiency of the transport services.

The sub-committee came to the conclusion that an essential preliminary to any further steps to be taken in the direction of releasing additional railwaymen for service with the Colours was a clear indication from the Secretary of State for War as to whether or not the time had arrived when further and drastic restrictions should be made in train-services and transport facilities, with a view to releasing more men from the railway staffs. Until such indication was given, no company could form a definite conclusion as to the number who could be released. In the event of any form of national registration being resolved upon, railways should be classed with the Post Office, the police, fire brigades, etc., as essential public services. Skilled railway mechanics, so far as they could be released from their ordinary duties, would be of greater use in the manufacture of munitions than in service with the Colours. Finally, the sub-committee said in their report they—

> Would like to place on record their opinion that the maintenance in an efficient condition of the railway service of the country is a matter of the first importance in connection with the crisis through which the nation is now passing, and that any impairment of that efficiency, caused by the unregulated withdrawal of staff, and especially of men actually concerned in the movement of troops—such as drivers, firemen, signalmen, shunters, guards and other trained men discharging responsible duties in the handling of merchandise traffic (e.g., goods-porters and checkers)—would be disastrous in its effects, and must result in the companies being unable to meet—as they have hitherto met—the requirements of the Government, not to mention those of the general public. The committee urge that this aspect of the matter should be placed before the Government in the strongest possible terms.

Badges for Railwaymen.

It was not thought necessary to proceed at once with the compilation of the suggested register, the more so on account of a decision that badges should be issued to railwaymen as a distinctive mark of their being engaged on work essential to the public well-being.

THE RAILWAYMAN'S BADGE.

A proposal that badges should be so issued was first made in November, 1914. It was approved by the Home Office in the following February, though certain matters of detail were left over for settlement. With the prospective developments of National Service, it was now thought especially desirable that railwaymen should wear some indication that they were not to be accepted for enlistment in the Army, and the issue of badges was arranged accordingly. On June 18th, 1915, the companies were authorised by the President of the Board of Trade to give the badges

—subject to the exercise of due discrimination—to men whose services were essential to the efficient working of the railways, and, also, to men engaged in the manufacture of munitions of war when such work was undertaken by the railway companies.

The badges bore the words, "Railway Service"—surmounted by the Royal Crown—and the name of the railway company issuing them in each instance.

Lord Derby's Scheme.

By the end of August, 1915, the railway contribution to the personnel of his Majesty's Forces amounted to 92,658, an increase of 20,000 on the number who had been called up or had enlisted by the early summer.

Once more it seemed that the limit of railway possibilities was being reached, and especially so having regard to the continued expansion in Government traffic; but the autumn of 1915 brought assurances that there was still a serious want of men for the Army, the number of new recruits being not even equal to the number required week by week to keep the units at the Front up to their full strength. There were, also, said to be still 2,000,000 unmarried men in the country who had not volunteered to join, while this fact was known to be keeping back a considerable number of married men of military age. Voluntaryism was, in fact, on its trial, and an eventual resort to compulsion appeared inevitable; but a further, if not a last, effort in favour of the former principle was now to be made, and, on October 5th, the Earl of Derby was appointed Director-General of Recruiting. Shortly afterwards he introduced a new scheme under which recruits were to attest at once and be divided into forty-six groups according to their age and whether they were married or single. These groups would be called up as required, unmarried groups being called upon first. All joining under these conditions were to be free to follow their usual occupation until the "call" was given to their particular group, a distinctive khaki armlet being worn by them in the meantime.

A great impetus to recruiting was given by the active advocacy of this new scheme, and public feeling was still further moved by the King's Message to his people, published on October 22nd. His Majesty's declaration that "more men, and still more men" were wanted, and his appeal to "men of all classes to come forward voluntarily and take their share in the fight" stirred the whole nation.

British railwaymen were, naturally, among those influenced by these fresh efforts, and pressing requests for permission to join were made to the companies alike by men who had applied before but could not then be spared and by men who now applied for the first time. Thereupon the Railway Executive Committee made an arrangement with the Director-General of Recruiting to the following effect: Any railwayman wishing to attest was to obtain from his immediate superior a card stating that

"The bearer ———, employed at ——— as a ——— in the ——— department, is authorised to enlist"; and this card, filled up and signed by an official of the company empowered to give such authority, was to be presented to the recruiting officer, who would put the applicant in his proper group and class. The attested railwayman would return to his railway work until he was called up; but he was not even then to leave unless the railway company by which he was employed assented thereto. Under this arrangement, the case of each man was to be carefully considered, and, if he could not be spared at once when his group was called up, it might be possible to arrange for his release later on, without dislocating the railway service. Each company was to use its best endeavours in aiding the Director-General of Recruiting to obtain additional recruits; but the decision of a company as to whether or not any particular man in its employ could be spared, or whether he should be transferred to a later class, was to be considered as final, no reference to a local tribunal being necessary in the case of men in the railway service.

Circulars explaining the scheme were sent out to their staffs by the leading companies, some of which urged therein that it was the duty of every man of military age who could now be spared to offer himself for enlistment. Others gave an assurance that permission to enlist would be granted to all who could be spared, while others, again, were content to make the position perfectly clear without seeking to influence their men at all.

Lord Derby's first enlistment campaign closed on December 12th, 1915. It was followed by a second, which opened on January 10th, 1916, and closed on the 1st of the following March, the understanding concerning railwaymen being the same as on the previous occasion.[1]

Military Service Act (January), 1916.

The general response to Lord Derby's appeals yielded some substantial figures; but it was, nevertheless, unsatisfactory since only 1,150,000 out of the 2,171,000 single men who were available in the country came forward, as against 1,679,000 married men. In accordance with a pledge given by Mr. Asquith, then Prime Minister, that compulsion would be applied to single men if any considerable number of men not engaged on essential national work refrained from offering themselves, the Government introduced on January 5th, 1916, a Military Service Bill which, passed into law towards the end of the same month, enacted that, subject to various exceptions, all unmarried men between the ages of eighteen and forty-one who had not already joined the Forces or had not attested would, on March 2nd, be deemed to have enlisted and to have passed to the Reserve. It was understood that such men would be grouped, according to age, as though they had attested. Local tribunals were to be

[1] The only change made in the earlier arrangements was that the cards issued to railwaymen by their superior officers were now to certify that the bearer was authorised to "attest" instead of to "enlist."

set up for the purpose of dealing with applications for certificates of exemption.

At the outset it appeared probable that, under this Act, application would have to be made to the local tribunals for exemption certificates in the case of all unattested single railwaymen who were either in "starred" grades as engaged in industries of national importance or were otherwise indispensable to the working of the railways. This prospect foreshadowed much inconvenience for the railway companies; but, as the result of representations made by the Executive Committee, the War Office agreed that substantially the same treatment should be accorded to railwaymen coming under the Military Service Act as had already been extended to railwaymen who had attested under Lord Derby's scheme. The companies were to forward to the recruiting officers concerned particulars of the men whose services they desired to retain, and, provided the War Office was satisfied that the certificates of indispensability thus received from the railways should be recognised, the recruiting officers would be instructed to regard the men in question as attested, and to mark them in the Army Register as not to be called up for military service. So many railwaymen had, however, already either joined the Forces or attested under the group system, prior to March 2nd, that the total number of those affected by the arrangement here in question, as men who had not attested and had thus (under the new Act) become liable for military service, was only 5,032, or less than one per cent of the total number of men employed on the British railways.

Military Service Act (May), 1916.

When the calling up, in steady succession, of the groups formed under Lord Derby's scheme led to a large number of married men having to join the Forces, there was great and widespread dissatisfaction that so many other young unmarried men who had not attested, together with so many unmarried men known either as "shirkers" or as "conscientious objectors," or else sheltered by "starred" trades and official occupations, were free from any obligation to serve. So strong, in fact, did public feeling become that the Government were at last obliged to bring in a Bill for the enforcement of compulsory service on "every male British subject who has at any time since August 14th, 1915, been, or for the time being is, ordinarily resident in Great Britain, and who has attained the age of eighteen years and has not attained the age of forty-one years." Introduced on May 3rd, 1916, the Bill received the Royal Assent on May 26th, and the new Military Service Act came into full operation on June 24th.

The passing of this further Act did not affect the arrangement under which only those railwaymen who could be spared by the companies were to be taken for military service; but, in order that men retained as indispensable should be able to produce evidence of their *bona fides*,

in case of need, a "protection" card to the following effect was issued to men of this class :—

.....**Railway.** *No*.....

.....1916

To.....

.....*Department* .....*Station*

You are hereby informed that your services are required in connection with the working of the Railway. You will not, therefore, at present be required to join the Army, but should you receive a notice calling you up, you should report to the Recruiting Officer who has sent you the notice, and show him this card, give him any particulars he may require, and ask him to communicate with the Railway Company if he has any doubts. This card has been issued with the approval of the War Office.

Signature of Authorised Officer.....

Address of Authorised Officer.....

.....

While the interests of the companies, of the individual railwaymen and of the railway service, on which so much depended, were thus being safeguarded, a fear was expressed on the part of the National Union of Railwaymen and the Associated Society of Locomotive Engineers and Firemen that the power placed in the hands of the companies to choose the men who should be called on, under the Military Service Act, to leave the railways in order to join the Colours might operate to the disadvantage of certain men, members of those Unions ; and it was asked that definite instructions should be laid down to regulate the procedure under which men who could be spared would be selected.

The Executive Committee appointed a sub-committee to go into the matter, and the members upon whom the task devolved reported that, although there were very few of the railways which, at any rate for the present, could release more men—and these to only a limited extent—it was nevertheless desirable there should be unified action on the part of the companies. The sub-committee accordingly recommended that the following rule should be adopted :—

When it is found that at any place a man of any particular grade or position can be spared, the youngest unmarried man fit for foreign service should be first chosen from the same grade, and from the station or depôt at which the man can be spared. If there is no single man available, the married man with the fewest children under fourteen years of age should be selected. In cases in which the number of children (under fourteen years of age) in family is equal, the younger man to be released.

It was foreseen by the sub-committee that there might be exceptional conditions at certain places which would call for a departure from this rule, as, for instance, in the case of a man trained for a particular post whose place could not be taken by another of the same grade, or of single men with several dependents. There might, also, be other circumstances

in which departure from the rule would be no less called for ; but authority for such departure could be obtained from the General Manager. Then the head of the department concerned in each instance would, no doubt, require to take the advice of his subordinates when exceptions to the rule were proposed, though he would also see that variations from the rule were not recommended for punitive reasons.

These views were adopted by the Executive Committee, and a Circular Letter was issued to the controlled companies in June, 1916, recommending the proposed rule to them for their adoption.

Following, however, on further representations made by the National Union of Railwaymen, the Government, with the concurrence of the Railway Executive Committee, appointed in September of the same year a Committee consisting of Mr. H. Courthope-Munroe, K.C. (Chairman), Mr. F. W. Goldstone, M.P., and Mr. J. C. A. Ward to inquire into cases brought before them in which, after appeal to the General Manager of the railway company concerned, the instructions as given above had not been followed, and to report to the Board of Trade what action, if any, was called for in each case. An additional guarantee of fair treatment was thus afforded to the railwaymen.

The procedure eventually arranged by the Railway Executive in regard to the release of railway workers for active service was, in effect, as follows : When it was found that a man of military age could be spared, he was to be so informed by his superior officer ; but the military authorities were not to be advised of the fact until after an interval of seven days, an opportunity being thus given to the man to appeal to his General Manager. Should he so appeal, and, if dissatisfied with the General Manager's decision, intimate his intention to bring his case before the said committee, he was to be allowed a further seven days in which to do so. If, within this time, the General Manager of the company did not receive word from the Secretary of the committee that an appeal had been lodged, he was to inform the military authorities that the man was available for enlistment.

"We want Men—More Men!"

In the autumn of 1916 the demand for recruits became, if possible, still more urgent than before. "The end is not yet," said General Sir William Robertson, Chief of the General Staff, in a speech he delivered on October 4th. "We must be prepared to go on for a period of time which it is impossible to estimate. . . . We have yet a long way to go. We want men—more men ! We want them now, and in due course we shall want all men who can be spared."

By the middle of October, 1916, the controlled companies had released 119,600 men. Twelve of them had released 108,000 out of this total. The same twelve had, also, since the war began, lost the services of 113,000 men who had gone to other occupations. A large proportion of them were believed to have taken to munition work, while the same companies

were themselves then employing 6,000 men on the manufacture of munitions of war. The aggregate of these figures meant the virtual loss by the companies in question of 41·2 of their pre-war staff, either altogether or for the purposes of railway work.

It was true that since the outbreak of hostilities a considerable number of fresh hands had been taken on. Most of them were unacquainted with railway duties and had to be trained therein. Of those, however, who received the training, a considerable proportion left as soon as the munition factories became specially active. Thereupon a fresh lot had to be engaged to replace, in turn, those already put on to replace the railwaymen who had joined the Colours, and the work of training had to be started over again. Thus there was a loss, not only in numbers (the more so, in this respect, because since March, 1915, the companies had undertaken not to engage any new men of military age), but in efficiency. Out of 58,200 men employed by one large company on the declaration of war only 37,700 remained. Of girls and women the same twelve companies were, by the end of October, 1916, employing over 33,000.

It was with staffs so depleted or transformed that the companies had not only faced abnormal demands for the conveyance of naval, military and civilian traffic but, at the urgent request of the Government, undertaken a variety of other obligations, such as the manufacture of munitions; the production of military necessaries in great variety and on a most extensive scale; the provision of rolling stock for use overseas and the construction of ambulance trains for use either at home or overseas.

Once again, however, in spite alike of all the varied demands made upon them and of the difficulties under which they were working, the railways were invited to make what further response they could to the cry of "More men for the Army."

Man-Power Distribution Board.

With the view of ensuring the provision of "more men" alike for the Armies in the Field and for the making of munitions at home, the War Cabinet appointed, early in September, 1916, a Man-Power Distribution Board, the main purpose of which was to determine all questions arising between Government departments relating to the allocation or economic utilisation of man-power for the successful prosecution of the war, and, in order to give effect to its determination, to direct the Government departments concerned to create the machinery necessary to co-ordinate their activities in regard to the distribution or utilisation of men and women. The Board held its first meeting on September 20th, and on October 5th it issued a Memorandum which stated (*inter alia*) :—

We have heard evidence tendered on behalf of the Admiralty, the Army Council, the Ministry of Munitions, and certain other Government departments. It has been proved to the Board that fresh supplies of men are urgently needed for the

Armies and munition factories in order to maintain our forces in the Field at the numbers already fixed for them, and, at the same time, to maintain the supply of munitions essential for their equipment and proper utilisation.

Among other measures adopted by the Board was that of calling on all tribunals to continue to give the most careful consideration in every case before granting exemptions, to avoid extending (except in cases of urgent necessity) the existing temporary exemptions, of which there were nearly 400,000, and to expedite the hearing of the 200,000 appeals then pending.

It was inevitable that a newly-formed body such as the Man-Power Distribution Board would seek to squeeze more men out of the already depleted railways, and towards the end of October, 1916, the Railway Executive Committee was asked to nominate a representative to give evidence before the Board. The General Manager of the London and North Western undertook the task. In the statement he made, Mr. Calthrop gave a detailed account of the railway position since the outbreak of the war, showing what the companies had done and the staff conditions under which they had operated. He also presented to the Board a collection of elaborately-compiled statistics bearing on these points. Dealing with the fresh demands then being made, he said the companies understood that the men specially wanted for the Armies were single men between eighteen years seven months and twenty-five years of age, and fit for Medical Category A.[1] In order to assist the country in this respect, they were again reviewing the work of all such men still in their employ. So far as the companies represented on the Executive Committee were concerned, they hoped to be able to arrange, by the end of March, 1917, for between 12,000 and 13,000 more of such men in Medical Category A to be released for military service.[2] The companies would be prepared to do still more if it were not for their deliberate opinion that by so doing they would impair the efficiency of the railways to such an extent as to jeopardise the transport of men and munitions.

It was also urged that there should be returned to the companies a certain number of other men who were ordinarily employed in the repair and erection of engines, whether these men were serving with the Colours at home or overseas. The railway companies were seriously concerned over the state of repair of a great number of their engines. Some of them were utterly unable to maintain in a fit state for work anything like the number of engines they had before the war. Representations had been made by the Executive Committee to the Government and to Government departments, from the Prime Minister downwards, on the subject of men and materials for engine repair, but, so far, without any appreciable result. He had been asked to convey to the Man-Power

[1] Recruits were, at this time, divided into the following seven classes, or "Medical Categories," according to fitness as shown by the results of their medical examination :— A, men fit for general service ; BI, fit for garrison duty abroad ; BII, labour units abroad ; BIII, sedentary work abroad ; CI, garrison duty at home ; CII, labour units at home ; CIII, sedentary work at home.

[2] The figures suggested were not attained by the date mentioned, but they were subsequently.

Distribution Board the strongest possible assurance that the representations in question related to *bona fide* necessities on the part of the railways. The Executive Committee could, in fact, no longer be responsible for what might happen if these requirements were not met. The members of that committee were fully alive to their responsibility, which they did not desire in any way to evade. If, however, it should not be possible to supply them with either the men or the materials asked for, then, having regard to the prospective increase in munitions traffic, the railway companies, while still doing their utmost to transport the traffic of the country, would look forward to the future with the gravest apprehension.

In respect to actual traffic conditions, Mr. Calthrop showed that, notwithstanding the curtailment in train services, there was, at that time, still an enormous amount of "joy-riding." If the War Office could see its way to grant less frequent week-end leave to troops quartered in England, a good many trains could be saved.[1] Nor did the companies see why so many train facilities for week-end leave should be given to munition workers.

A Recruiting and Substitution Sub-Committee.

Simultaneously alike with the suggestion that the railway companies should spare still more of their men for the Fighting Forces and with the urgent need for the return to them of railway-workshop hands from the Army, there came intimations from the Front that a large number of additional railwaymen would shortly be wanted for the Railway Troops with the British Army in France.

How to meet these various requirements and, at the same time, maintain the efficiency of the railways, from a traffic point of view, became a problem which gave rise to some degree of complexity ; and once more a solution was sought by the Railway Executive in the creation of a Joint Sub-Committee, formed alike of representatives of that body and of the Government departments concerned, for the purpose of studying the whole question in its varied aspects and recommending the adoption of such course as might be found expedient.

Following, accordingly, on an interview which the Acting-Chairman of the Railway Executive had, in November, 1916, with Sir Eric Geddes, then Director-General of Military Railways and Inspector-General of Transportation, there was formed a "Sub-Committee on Recruiting and Substitution of Railwaymen" which brought four representatives of the Executive Committee, namely, Mr. Guy Calthrop (L. & N.W.), who acted as Chairman, Mr. F. Potter (Great Western), Mr. C. H. Dent (Great Northern), and Mr. F. Tatlow (Midland), into direct touch with representatives of the Recruiting Movement Directorates of the War Office and, also, of the Director-General of Military Railways. The special function of this sub-committee was to discuss questions arising in connection with the enlistment of railwaymen for service in the Army ; to agree upon the

[1] The number of trains then being run at week-ends for the conveyance of home troops on leave was 163.

steps that should be taken to increase the number of men to be made available for enlistment, and, at the same time, to ensure that due consideration was given to the technical requirements of the railways.

When the sub-committee held its first meeting, on November 17th, 1916, the War Office had already taken steps towards carrying out one of the suggestions made by Mr. Calthrop to the Man-Power Distribution Board, instructions having been sent to the various Commands to prepare lists giving particulars of such railwaymen among the Forces still in this country as were not likely to be fit for general service abroad within at least four months, and were not engaged in the Army on their usual occupation. These men would, if willing, be returned *en bloc* to their railway work, and the companies would then be better able to release the Class A men who were so much wanted for the Army. Meanwhile it was agreed that the railway companies would no longer ask, as they had been doing, for the return to them of individual railwaymen from the Colours, though an exception was made in regard to certain men urgently wanted for the carrying out of engine repairs on the Caledonian and Highland Railways. These were to be sent back at once.

The lists were duly prepared by the Commands, and it was understood that they contained, altogether, some 10,000 names. In consequence, however, of the pressing need for additions to the Railway Troops, the majority of the men on the lists were transferred thereto, and very few indeed were returned to the railways.

Mr. Calthrop had mentioned to the Man-Power Distribution Board that a considerable number of railwaymen of military age, including many of those grouped under Lord Derby's scheme, had not yet been examined by the Medical Boards, and it was now further arranged that all single men, between the ages of eighteen years seven months and twenty-five years inclusive, who could be spared by the companies should be medically examined at the earliest moment, and that those who, after such examination, were placed in Category A should be released for the Army before the end of March, 1917. An exception to this rule was to be made in the case of certain specified grades; though even men in these grades were to be released unless it should be found absolutely impossible to replace them either by male substitutes, themselves ineligible for military service, or by women.

As far as was practicable, the existing Medical Boards in the recruiting areas into which Great Britain had been divided were to be utilised for the examinations. The railway companies were to furnish to the officer in charge of the nearest recruiting area lists of the men to be examined, and that officer was to arrange for the examination to be carried out as expeditiously as circumstances would permit in order that the men should not be away from their railway duties for a longer time than was necessary. A like consideration led the War Office to suggest to the Railway Executive Committee that, inasmuch as many of the railwaymen would be working at places some distance away from where the nearest Medical Board was located, Travelling Medical Boards should be

set up in convenient railway centres. With this proposal the Committee concurred, and, on their suggestion, the railway companies placed at the disposal of each Travelling Medical Board, when other convenient accommodation was lacking, two saloons, one of which would serve as an examination room and the other as a dressing-room, the members of the Board being thus enabled to perform their duties, with the least possible delay to the men, at any point in a railway station or on the adjoining sidings where the two saloons could be allowed to stand.

After the examination, the men were to return to their work and the railway companies concerned were to forward to the Executive Committee lists giving particulars in regard to such single men, between the aforesaid ages, and placed by the medical examiners in Category A, as they would be able to spare by the end of the ensuing month. It was considered essential to the proper conduct of the railway business that the companies should themselves decide the order in which their men were to leave. The recruiting officers, also, were not to call up any men from companies controlled by the Railway Executive Committee until they received specific instructions from the War Office so to do.

In order that the various demands for the release of railwaymen at home might be co-ordinated, it was arranged that the railway companies' monthly lists, giving (1) the names of the men who had been examined by the Medical Boards and could be spared, (2) their qualifications, (3) their grades in the railway service, and (4) the class of medical fitness into which they had been passed, should be forwarded by the Executive Committee to its Railway Troops Sub-Committee formed by Sir William Forbes (London, Brighton and South Coast Railway), Sir Francis Dent (South Eastern and Chatham), and Mr. A. Watson (Lancashire and Yorkshire), who had taken charge of enlistments for Railway Construction Companies, the Railway Operating Division and the Railway Transport Establishment respectively. Representatives of these three gentlemen —subsequently joined by representatives of the Director-General of Military Railways, the Director-General of Recruiting, War Office, the Director-General of Recruiting, Ministry of National Service, and the Railway Executive Committee—were to go through the lists, and men passed into Category A whose special qualifications warranted their allocation to one or other of the three units mentioned would be dealt with accordingly. The lists were then to be forwarded to the Director of Recruiting for the calling up of those intended for the Fighting Units.

Railwaymen passed by the military doctors into Categories lower than BII, "fit for labour units abroad," were to be utilised as far as possible as substitutes for railwaymen in the higher classes whom the companies would not otherwise be able to spare. Men placed in Categories BIII and CI, II, and III were to remain in the railway service and not be called up at all.

In regard to home-service railwaymen who were unfit for foreign service and were to be released from the Army, it was arranged that those

who were physically competent and technically qualified to join the Railway Troops should be transferred to that Corps. The remainder were to be sent back to their railway work. Men so returned to civil life were to be placed in "Army Reserve, Class W," or, in certain circumstances, to be discharged from the Army.

The general policy of substitution was now to be further encouraged by a resort to the training of men not fit for general service abroad in order to qualify them to take the place of others who were fit but belonged to grades—such as those of shunters, goods guards, signalmen, etc.—which could not be unduly depleted without risk of grave prejudice to the proper working of the railways. Foreseeing the demand from France for more and still more men belonging to these all-important grades, the Railway Troops Sub-Committee had arranged, about March or April, 1916, for the training of 1,500 clerks in the duties of men belonging to the grades in question; and the early adoption of this course was of the greatest advantage in helping to meet the demands for Railway Troops overseas which came to hand with increasing urgency in the autumn and winter of the same year. In fact, but for the measures thus taken, those requirements could not possibly have been supplied without a much more serious interference with transport services at home than was actually experienced.

There was now, also, a wider resort to the same policy, men who were not fit for general service abroad being trained and qualified to act as substitutes at home for men who were; while still more were trained for the Railway Troops. As all these men became competent, their names were put on the monthly lists supplied by the railway companies showing the additional men who had become available and could be spared.

Happily, however, the companies were not expected to provide from their own depleted resources all the men who were required for the Railway Troops in France. Railwaymen of the Medical Category B standard already serving in the Army in France were transferred from the Fighting to the Railway Forces there. At the end of 1916 it was expected that about 5,000 would be obtained by this means. Railwaymen among the troops from Australasia and Canada were also put on to railway work on the Western Front, while the transfers to the Railway Troops from Medical Category B men already serving in England afforded still further relief.

By such means as these, the direct contribution of the British railways to an additional 8,000 Railway Troops asked for at the end of 1916, to meet immediate requirements, was reduced to 2,500.

In supplying even this small number, the companies were handicapped alike by the fact that so many of their men had already either joined the Forces or gone into munition works; by the agreement between the Government and the trade unions under which skilled men in certain trades who were members of the Amalgamated Society of Engineers (as was the case with many of the railwaymen) were to have a "trades card" exempt-

ing them from military service; and by the requirement that single railwaymen passed into Medical Category A were, if between eighteen years seven months (altered in January, 1917, to eighteen years) and twenty-five years, not to be selected for the Railway Troops unless possessing special qualifications. An attempt was made by the Railway Executive Committee to obtain a modification of this last-mentioned restriction; but the need of men for the Fighting Units was increasingly urgent, and the only concession the Committee could obtain was that suitable *married* men passed into Medical Category A might be selected for training for the Railway Troops.

Further Demands.

During 1917 there was a succession of demands for still more men.

In accordance with the offer made to the Man-Power Board in October, 1916, the companies had undertaken that 12,000 single men between the ages of eighteen years seven months and twenty-five years (afterwards eighteen years and twenty-five years) should be released by the end of March, 1917. Mr. Calthrop made this offer subject to certain conditions which, in point of fact, remained unfulfilled; but, as the result of pressure brought to bear on the Railway Executive, action was taken early in March to impress upon the companies the need for their doing all they could to carry out the undertaking in question.

Towards the end of the same month, the military authorities decided that all railwaymen under the age of eighteen who had enlisted and been transferred to "Army Reserve, Class W," were to be recalled to the Colours on attaining that age, irrespective of their civil employment; and the railway companies were accordingly warned that any such men then in their employ would have to be considered as "lent" to them until they were of military age.

In April a request was made for close on 5,000 men who were wanted as an addition to the Railway Troops already supplied. The Railway Troops Sub-Committee were left to meet these requirements from the monthly lists.

A few days later the Army Council asked that, in view of the then vital necessity for young, active and physically-fit men for the Army, the instructions previously issued by the Railway Executive Committee should be so far varied that men up to the age of thirty-one who were physically fit for foreign service should, irrespective of whether they were married or single, be released for such service before men above that age were taken, and that Medical Category A men should be released for military service in priority to men below that category. After a consultation on the subject between the Board of Trade, the National Union of Railwaymen and the Associated Society of Locomotive Engineers and Firemen, the Railway Executive Committee gave instructions in accordance with the Army Council's request.

While this matter was being arranged, the War Cabinet made a special appeal to all employers of labour to release a further large number of men to replace the heavy casualties which had already taken place, or were expected shortly to occur, as the result of the forward movement of the British Forces in the North of France. There were then about 210,000 men of military age still serving on the railways, and it was asked that 10 per cent. of the number should be released before the end of July. The Railway Executive promised that this should be done. The carrying out of the undertaking was facilitated by the fact that the trade-union card system was cancelled by the Government as from May 7th.

There was another direction, also, in which the railways were now enabled to respond more readily to the demands of the military authorities.

It has been stated (p. 350) that the companies were recommended by the Railway Executive Committee, under date March 22nd, 1915, not to engage any new men who were of military age ; but in June, 1917, the Executive came to the conclusion that the time had arrived when the position should be reconsidered. Their view was that, if the railway companies were left free to take into their employment men of low medical category, it would be possible for them to release a still larger number of Category A men for service in the Army. Suggestions to this effect were made to the War Office, and it was arranged that men relegated to the Reserve by a Medical Board, and, also, men over twenty-five years of age who had been classified by a Medical Board as BIII or CIII, might now be taken into the railway service.

In these and other ways it became possible, by the end of July, to supply the names of the 21,000 men asked for in April and to complete all necessary arrangements for their release. By the middle of the following September the balance of the 12,000 promised to the Man-Power Board had also been made up. The lists at this date showed, indeed, a surplus of 456 over and above the sum total of these two figures of 21,000 and 12,000 respectively.

In December, 1917, the War Cabinet intimated that the railways would be required to release a further considerable number of men for service with the Colours, and, although the precise number required had not then been mentioned, the Railway Executive Committee agreed in the early days of the New Year that the companies should proceed forthwith to release men at the rate of 500 per month. Towards the end of January the War Cabinet decided to call for the release of 6,000 " Category A, or Grade I " men, during the year 1918 ; though to the announcement made to this effect it was added that any men of lower medical grade who could be released for service in the Railway Troops or in the Operating Division, R.E., would be considered as contributing to the stipulated quota.

By this time the recruiting work formerly done by the War Office had, under the Military Service Acts, been transferred to the Ministry of

National Service, and that department had, for the purposes of enlistments, amended the classification in connection with the medical examination of men for the Army, though the old classification into "medical categories," or "classes," was retained by the military authorities as applying to men after enlistment. The Ministry of National Service adopted the designation "grade," and provided for four grades to cover, for medical-examination purposes, the whole of the military medical categories. These grades were applied as follows: Grade I, generally equivalent to Category A, men in which were passed for general service; Grade II, generally equivalent to Categories BI and CI, signifying fitness for garrison service abroad or at home; Grade III, generally equivalent to Categories BII and CII, BIII and CIII; and Grade IV, equivalent to rejection under the old classification. Following on this new classification, the Director-General of Recruiting intimated that he had now no objection to the controlled railway companies taking into their employment men of any age who were placed in Grade III.

The Year of Victory.

The need for more men which had been foreseen in December, 1917, developed into urgent necessity in the spring of 1918, when the enemy, making a prodigious effort, advanced thirty-five miles towards Amiens, regained the ground he had lost in this direction in 1916–17, and made further desperate attempts to break the line of the Allies and to reach Paris and the Channel Ports.

American troops were now arriving in steadily-increasing number (President Wilson announced on July 2nd that over 1,000,000 United States troops had then sailed for France), and drafts on an exceptionally large scale were sent from the reserves of British troops in this country. In consequence of this last-mentioned fact there arose an imperative necessity that the drain upon our reserves should be made good. As one means to the attainment of this end there was introduced into the House of Commons by the Minister of National Service, on April 5th, a Military Service Bill (No. 2), 1918, which raised the military age from forty-one to fifty-one. The Bill passed through both Houses and had received the Royal Assent by April 18th. The Minister of National Service (Sir Auckland Geddes) thereupon gave an assurance that it was not his intention, "for the present," to interfere with the protection cards issued to railwaymen who were indispensable to the proper working of the lines; but he urged upon the Railway Executive that efforts should be made for the release of every available man between then and the end of June, when an especially critical period was likely to be reached.

Having regard both to the gravity of the military situation and to the pressure brought to bear upon them by the Ministry of National

Service, the railway companies made a strenuous endeavour to release men in the greatest possible number and with the utmost possible dispatch. So well did they succeed that by the end of May they had submitted to the Director-General of Recruiting the names, not only of the 6,000 men whom, in the previous December, they had been asked to provide during 1918, but of 614 more in addition. In other words, recognising the extreme gravity of the military situation, they accomplished in five months what they had been invited to do in the course of one year. By the end of June the number of men "offered" since January 1st had been increased to 9,493.

Such was the need for men at this time that the military authorities began to transfer all Category A men from the Railway Troops to the Fighting Forces. They also started to re-examine all lower-category men in the Railway Troops with a view to sending to the Fighting Units as many as were, on such medical re-examination, brought under the A classification. The Railway Executive Committee thereupon represented to the Ministry of National Service that this procedure would constitute a breach of the understanding made by the railway companies with those of their employees who had joined the Railway Troops, and might give rise to serious dissatisfaction and much consequent trouble. The Ministry thereupon agreed that men already enlisted or to be enlisted in the Railway Troops should be allowed to remain there; but any Category A men who joined the Railway Troops were to be liable to transfer to the Fighting Units if the military situation should render expedient the adoption of such a course.

A Supreme Effort.

While the Executive Committee had thus sought, even in a time of extreme national emergency, to ensure the fulfilment of what had been virtually a pledge to certain classes of railwaymen, they nevertheless made, in another direction, a supreme effort to release still more men to take part in what, as the event showed, were to be the last phases of the World's Greatest War.

On May 3rd, 1918, the Committee addressed a Circular Letter to all the controlled companies asking them to give for each and every department and railway grade the number and enlistment grade of all men in their service who belonged to groups of ages ranging from eighteen to forty-one.

The returns sent in were closely examined by a sub-committee of the Railway Executive. It was then found that there were still in the railway service a large number of men under thirty-one years of age, and that, while a certain proportion had been classified as "A" men, a still larger proportion had not been classified at all. After careful consideration the sub-committee recommended to the Railway Executive that a "clean cut" should be made, and that all Grade I men, under thirty-one

years of age, in certain specified departments, should immediately be released for service with the Forces.

At this time—the first week in June, 1918—every "A" man who could possibly be got was wanted at the Front; and the Railway Executive Committee, approving the proposal of the sub-committee, asked the controlled companies to release for enlistment all men under thirty-one who were employed by them in any of the following departments: Headquarters Offices, Traffic, Engineering, Locomotive, Carriage and Wagon, Signal, Telegraph and Electrical, Stores and Stationery. No man under thirty-one years of age was to be retained for service with any company except with the personal sanction of the General Manager.

Action along these lines was at once taken. Between July 1st and November 11th, the date of the signing of the Armistice, there had been "offered" to the military authorities the names of 4,974 additional railwaymen, making with the 9,493 to the end of June a total of 14,467 since January 1st, 1918. Not the whole, however, of the further 4,974 were enlisted. Allowing about a month for all the formalities which had to be gone through in actually drafting the men into the Army, the number of railway-workers added to the Fighting Forces as the result, presumably, of the further action taken in June was about 4,000, leaving close on another 1,000 who had been "offered" but not definitely accepted. Enlistments of railwaymen were, indeed, still in course of procedure when the signing of the Armistice brought hostilities to a close.

Ten days later the railway companies were told that, inasmuch as the Ministry of National Service had announced the suspension of all recruiting, "for the present," any notices in the possession of their employees either for medical examination or requiring them to join the Colours were to be regarded as cancelled. The "All Clear" message was sent out on December 4th, when the controlled companies were informed by the Railway Executive Committee: "Now that recruiting under the Military Service Acts has been suspended, you are at liberty to engage men of any age."

Total Enlistments.

As the final result of all the efforts here narrated, the number of men withdrawn from the service of British railway companies to join the Colours down to the cessation of hostilities was 184,475. This figure was 49 per cent. of the staff *of military age* on August 4th, 1914. The following table gives the total number for various companies and the percentages thereof to the total staffs (irrespective of age) on the outbreak of the war:—

Railway Company.	Total released to Nov. 10th, 1918.	Percentage to total staff Aug. 4th, 1914.
Alexandra Docks	416	33·0
Avonmouth Light	2	50·0
Barry	791	26·1
Brecon & Merthyr	103	15·0
Burry Port & G.V.	15	11·17
Caledonian	5,229	21·9
Cambrian	452	22·0
Cardiff	713	30·0
Cheshire Lines	1,279	24·73
Cleator & Wkgton.	50	29·24
Cleobury-Mortimer & D.P.	7	23·0
C., Kes. & Penrith	39	24·68
Colne Valley	25	20·16
E. & W. Yorks. Union	17	21·66
Easingwold	2	18·0
East London Joint	49	54·0
Festiniog	18	19·56
Furness	515	18·00
Glasgow & S.W.R.	2,458	22·78
Great Central	10,135	29·38
Great Eastern	9,734	28·9
Great North of Scotland	609	22·15
Great Northern	9,694	28·0
Great Western	25,460	32·6
Highland	668	25·0
Hull & Barnsley	1,381	39·51
Isle of Wight	59	40·0
Isle of Wight Central	67	32·2
Kent & East Sussex	23	45·0
King's Lynn Docks	12	15·38
Knott End	7	20·0
Lancs & Yorks.	10,453	27·49
Liverpool Overhead	108	21·0
L. & N.W.R.	31,744	34·1
L. & S.W.R.	6,621	27·3
L.B. & S.C.R.	5,207	32·3
Lynton & Barnstaple	18	30·0
Maryport & Carlisle	135	25·84
Mersey	158	24·0
Metropolitan	1,181	29·0
Met. District, Etc.	3,086	49·0
Midland	21,813	29·38
Mid. & G.N. Jt.	825	34·0
Mid. & S.W. Jc.	193	35·0
Neath & Brecon	64	22·1
North British	4,554	18·38
North Eastern	18·339	33·7
North Stafford	1,372	23·00
Portpatrick & Wigtown Jt.	84	33·33
Port Talbot Docks	139	37·0
Rly. Clearing House	1,314	45·00
Rhondda & Swansea Bay	51	17·91
Rhymney	399	23·17
Shropshire & Montgomery	14	29·0
Somerset & Dorset Jt.	392	27·27
S.E. & C.	5,074	23·74
Southwold	1	10·00
South Yorks. Jt.	11	20·19
Stratford-on-Avon & Mid. Jc.	59	24·00
Taff Vale	1,085	21·6
Weston, Clevedon & Portishead	11	37·00
Wirral	56	17·0

This table is of exceptional interest in so far as it shows the actual extent to which the staffs of British railway companies, great and small, were reduced by enlistments at a time when traffic requirements had assumed abnormal proportions and the need for maintaining the efficiency of the railway service was a matter of extreme, if not of actually vital, importance.

The companies, also, had not only to meet this situation with the loss of so many of their skilled and experienced workers, but they practically acted, in addition, as recruiting agents for the Government, undertaking in connection therewith—as the details given in the present Chapter have shown to the reader—a vast amount of work which in itself imposed an additional strain upon the already overtaxed energies of the railway managers, officers and clerical staffs concerned. There may have been

an early tendency on the part of the companies to think that the limit of sacrifice in the way of enlistments had then already been reached by them; but, as the need of the military situation increased in gravity, their readiness to respond to the reiterated calls for "more men" increased proportionately, while the effort they made in the final year of the World-Conflict was, in the circumstances of their situation, magnificent.

So it is that in the story of what the British railways did to help in the Great War, a leading place must be given to the fact that they contributed from their staffs no fewer than 184,475 men to his Majesty's Forces, and not only carried on, all the same, but met, in addition, enormously greater transport demands than had ever been made on them before.

Railway Separation Allowances.

At the time of mobilisation the scale of Government separation allowances for the Army was:—

For wife only.	Wife and one child.	Wife and two children.	Wife and three children.
11*s.* 1*d.*	12*s.* 10*d.*	14*s.* 7*d.*	16*s.* 4*d.*, and 1*s.* 2*d.* per week for each subsequent child.

These sums included the compulsory allotment by the soldier of 6*d.* per day in respect of his wife, and 2*d.* per day for each child.

In the case of the Navy, the Government allowances were:—

For wife only.	Wife and one child.	Wife and two children.	Wife and three children.
6*s.*	8*s.*	10*s.*	11*s.*, and 1*s.* each for subsequent children.

The hardship which would have been experienced in many cases of railwaymen—a considerable number of whom were Army and Navy Reservists or members of the Territorial Force obliged to respond to the demands of mobilisation—in being called away suddenly from their homes was at once recognised by the railway companies, and a scheme was authorised by the Railway Executive Committee under which the companies were empowered to supplement the Government separation allowances by such amounts as would bring the income of the dependents up to, as a general rule, four-fifths of a man's wages at the time of enlistment. A payment of 7*s.* to a wife and 1*s.* additional in respect to each child was decided upon as a minimum, provided that the total payments from the Government and the companies did not exceed the man's rate of pay.

It was further agreed that this system of affording assistance to the dependents of men called to the Colours at the time of mobilisation should

be extended to the dependents of all those who enlisted in H.M. Forces with their employers' concurrence.

In October, 1914, a general improvement was made in the Government scale of allowances, and in March, 1915, there was a further improvement in so far as children were concerned. In pursuance of the principles laid down to govern the companies' supplementary allowances, these allowances had to be reduced in proportion to the improvement in the Government grants.

In January, 1917, the Government scale affecting children was again improved. In October of the same year there was a general advance in the remuneration of members of H.M. Forces, and the men were relieved of the compulsory allotment from their pay, a corresponding payment being made to dependents from State funds. In October, 1918, the allowance in respect of children was once more increased, and as from January, 1919, a still further improvement was made, this time in the case of childless wives unable to undertake employment.

None of these later gradations in the betterment of the financial circumstances of dependents were, however, allowed to affect the allowances made by the companies. The fact was recognised that the increases granted by the State in January, 1917, and subsequently, were designed to help to meet the greater cost of living, and that any further reduction in the scale of the companies' allowances would discount the benefit which the Government action was intended to effect.

In addition to the allowances made to the married men's dependents, the companies gave assistance to those who were dependent upon single men at the time of enlistment.

Altogether, upwards of 100,000 supplementary allowances were granted by the companies to dependents of their employés, the total cost thereof running into many hundreds of thousands of pounds.

Decorations Awarded to Railwaymen.

So far as can be ascertained from the British railway companies whose lines passed under State control on the declaration of war, the number of military or naval decorations, home or foreign, awarded to members of their staffs who joined H.M. Forces was no fewer than 5,357. This total is exclusive of the large number of civil decorations also awarded, though not here brought into account.

How the figure stated is made up will be seen from the following list, in which, however, no attempt has been made to arrange the decorations (seventy-three in number) in their order of precedence or importance :—

K.C.B. (Knight Commander of the Order of the Bath)	1
V.C. (Victoria Cross)	6
C.B. (Companion of the Bath)	3
C.M.G. (Companion of the Order of St. Michael & St. George)	3
K.B.E. (Knight of the British Empire)	4
C.B.E. (Commander of the British Empire)	2
O.B.E. (Order of the British Empire)	32

M.B.E. (Member of the Order of the British Empire)	21
D.S.O. (Distinguished Service Order)	30
M.C. (Military Cross)	283
D.F.C. (Distinguished Flying Cross)	9
A.F.C. (Air Force Cross)	2
Albert Medal	8
Albert Silver Medal	1
D.C.M. (Distinguished Conduct Medal)	610
D.S.M. (Distinguished Service Medal)	36
M.M. (Military Medal)	2,517
D.F.M. (Distinguished Flying Medal)	3
M.S.M. (Meritorious Service Medal)	586
Mentioned in Dispatches	649
Medal and Certificate of the Royal Humane Society	1
Brought to Notice for Valuable Service	53
D.S.C. (Distinguished Service Cross)	8
A.F.M. (Air Force Medal)	4
Bronze Oak Leaf	29
King's Silver Medal	1
Territorial Efficiency	1
1914 Territorial Decoration	3
Special Territorial Medal	1
Certificate for Gallant Conduct	1
Special Service Cross of British Red Cross Society	1
1914–1915 Star	10
Parchment 1009	1
"A" Parchment	2
Ginchy Diamond	1
M.V.O. (Member of the Victorian Order)	1
Medaille Militaire (French)	25
Croix de Guerre (French)	112
Medaille d'Honneur avec Glaives (en argent) (French)	3
Medaille d'Honneur avec Glaives (en vermeil) (French)	1
Medaille d'Honneur avec Glaives (en bronze) (French)	22
Croix de Guerre (Belgian)	74
Officier de l'ordre de Leopold (Belgian)	11
Croix de Chevalier de l'ordre de la Couronne et Croix de Guerre (Belgian)	12
Order of St. Maunce and St. Lazarus (Italian)	1
Bronze Medal (Italian)	6
Croce di Guerra (Italian)	9
Medal of St. George 1st Class (Russian)	9
Medal of St. George 2nd Class (Russian)	1
Medal of St. George 4th Class (Russian)	18
Order of St. Stanilus with Swords and Ribbons (Russian)	4
Order of St. Stanilus (Russian)	9
Silver Medal of the Order of St. Anne (Russian)	6
Military Cross (Greek)	3
Military Cross (3rd Class) (Greek)	2
Order of Military Merit (3rd Class) (with Palms) (Greek)	2
Gold Medal (Serbian)	5
Silver Medal (Serbian)	8
Cross of Humanity (Serbian)	2
Medaille Barbatie Si Credinta (1st Class) Roumanian	7
Medaille Valeur (Italian)	3
Order of St. Michael (Russian)	1
Italian Asiago	1
Italian D.S.M.	1

Memorial Service to fallen Railway Men at St. Paul's Cathedral, May 14th, 1919. Arrival H.M. the King.

Memorial Arch in course of Construction at Waterloo Station, London, and dedicated to London and South Western Railway Men fallen in the War.

Belgian Medal of Honour	3
Serbian D.S.M.	2
Greek Order of the Redeemer	2
Order of the Nile	2
Serbian Cross of Karageorge 2nd class (with Swords)	3
Croix de Virtute Militara (Roumanian)	1
"Pour Courage et Devouement" (Ministere de la Marine)	1
Chevalier d'Ordre d'Avis (Portuguese)	1
Foreign Decorations (not specified)	60

Number of Railwaymen Killed, etc.

Inquiries among the controlled British railway companies show that the number of members of their staffs who were killed or died of wounds or sickness while on active service with his Majesty's Forces was 21,522, though this figure must not be considered complete, as regards the sum total of railwaymen in the United Kingdom who took part in the war.

Memorial Services.

Honoured by the presence of his Majesty the King, Queen Alexandra and Princess Victoria, and attended by a congregation of some four thousand persons, including the Lord Mayor of London and the Sheriffs, over three thousand bereaved relatives, chairmen, directors, general managers, and chief officers of leading railway companies in the United Kingdom, and representatives of State departments concerned in railway control or working, of railway organisations or societies at home, and of railways or railwaymen in Canada, South Africa, Victoria, Queensland, South Australia, Western Australia, Tasmania, New Zealand, France, Belgium, Italy and Japan, a service held in St. Paul's Cathedral on Wednesday, May 14th, 1919, in memory of the railwaymen of Great Britain and Ireland who had joined the Forces and been killed in action, had died of wounds or been reported as missing, was one of the most notable and impressive of public events in this country in the post-war period.

The King and the Royal Party were received at the Cathedral (as the Lord Mayor and Sheriffs had also been, somewhat earlier) by Lord Bessborough and Lord Churchill, chairman and deputy-chairman respectively of the Railway Companies' Association. Meanwhile, during the time the congregation was assembling a programme of music was given by an orchestra of about 150 male and female performers drawn from the staffs of various railway companies, and conducted by Colonel W. J. Galloway, one of the directors of the Great Eastern Railway Company. That women should take part in a service in St. Paul's Cathedral was stated to be without precedent in the history of the edifice; but their doing so was a graceful recognition, not only of the part that women had played in the winning of the war, but, more especially, of the fact that it was their readiness to take up railway work in a great variety of forms which had enabled many of those in whose memory the service was being held to join the Forces and make the sacrifice of their lives for the Great

Cause in which they fought. Another special feature of the service was that the duties of sidesmen were performed by railway inspectors or senior guards of all the railways entering London.

The members of the orchestra occupied seats at the foot of the steps leading to the Choir. Assisted by drummers of the Grenadier Guards, they gave the following selections :—

"Funeral March"	*Chopin*
"Largo," in G♭	*Handel*
Fantasy-Prelude (Organ)	*Macpherson*
"When I am laid in Earth"	*Henry Purcell*
Overture in C, "In Memoriam"	*Sullivan*

The Order of the Service was contained in a specially-printed book which further gave the names of railwaymen who had lost their lives in the war and was supplemented by a separate leaflet on which was recorded by the Great Eastern Railway Company the name of Captain Fryatt, "who was foully murdered by the Germans after the capture of his ship, the S.S. *Brussels*."

The service opened with the singing of the hymn, "Onward, Christian Soldiers," rendered with great effect by a congregation obviously influenced by feelings of profound emotion. The Psalm sung was the Twenty-third. After the reading of the lesson came the appeal : "Let us remember with thanksgiving, and with all honour before God and men, the railwaymen of Great Britain and Ireland who have died giving their lives in the service of their country." The singing by the congregation of "Jesu, Lover of my soul," was followed by prayers, including one "For those whom the war has made desolate and broken-hearted." An address, based on the words "To guide our feet into the way of peace," was then given by the Bishop of Peterborough, who, among other things, told how railwaymen had, at their country's call, gone forward from workshop, from footplate, from signal box, from platform, from manager's office, and from platelayer's cabin. He read official accounts from the *London Gazette* of brave deeds performed by railwaymen, and he declared that the records of those deeds were but typical of the courage everywhere and at all times shown by railwaymen, who were as cool on the battlefield as they had been on the line, at the station, or in their office.

At the close of this discourse, the hymn, "O God, our help in ages past," was sung by the congregation with the combined accompaniment of the organ, the orchestra and a section of the band of the Grenadier Guards.

What followed is thus graphically described by a sympathetic writer in the *South Western Railway Magazine* for June, 1919 :—

> The harmony died away in an impressive "Amen," and we knelt for the Benediction. A moment of silence and we stood—expectant and tense. Then, coming as from far, far away, we heard a sound as of many waters, as of distant artillery in action, the rolling of the drums of the Guards, preluding the opening notes of the "Dead March" in *Saul*, and presently these poured forth from the great organ in all their gripping intensity and power. In vast, vibrant waves came the melody of mourning and memory, and with bowed heads the congregation gave itself up to drinking in the solemn song of sorrow—a song without words, for what words could do justice to the sacrifice of those whose service we were commemorating ?

The majestic music melted away in the distant Whispering Gallery, and then, with moving effect, the plaintive bugle notes of the "Last Post" broke forth. Our comrades were men who had remained at their posts faithful to the end; our brother railwaymen who had booked their last train, done their last job, waved the last flag, and steamed away from this railway life into . . . eternity.

Then out rang the Réveillé and we thrilled as we felt the glad truth that when sounds the Final Réveillé we have an inextinguishable faith that we shall be found gathered with those who have "gone before."

That Réveillé—sounded there before the altar in the ancient heart of Britain's capital—seemed to appeal to us to prove ourselves worthy of the sacrifice of our friends and kinsfolk, to awaken, to rise up and fashion from the track of tribulation that "way of peace." Amid those historic surroundings—in that carved stone temple of historic wealth—who stood and could fail to heed that appeal to service, that call to awakening and action?

Reverently we sang a verse of the National Anthem, and the King, Queen Alexandra and the Royal and Civic processions passed out while the glorious "Hallelujah Chorus" was rendered.

Slowly we filed out into the afternoon sunshine, to the warm, real world, to the roar and animation of the city life, and then, back to the railway stations we bent our steps.

And in our hearts we were glad that we had been privileged to be present, we were grateful that we had been spared through all the tumult of war, and we felt undeniably proud to belong to the glorious brotherhood of railwaymen.

The following letters were afterwards received by Lord Bessborough :—

Buckingham Palace,
May 14th, 1919.

Dear Lord Bessborough,—I am desired by the King to assure you of how glad his Majesty was to be able to attend the impressive service held to-day at St. Paul's Cathedral in honour of the railwaymen, officers and men who gallantly made the supreme sacrifice of their lives in the Great War.

It was a source of much gratification to the King to observe that the orchestra, under the able direction of Colonel Galloway, which gave so fine a rendering of the musical part of the service, included many ladies among its numbers.

I am to add that his Majesty was greatly pleased with the excellence of all the arrangements made for to-day's ceremony,

Believe me,
Yours sincerely,
(Signed) CROMER.

The Earl of Bessborough, K.P.

Marlborough House,
Pall Mall,
May 16th, 1919.

Dear Lord Bessborough,—I conveyed your message to Queen Alexandra, and I am desired by her Majesty to thank you and to say how glad she was to have the opportunity of testifying her regard and respect for the railwaymen of England who have done such splendid service throughout the war, in which they have suffered so heavily.

Queen Alexandra thought the service at St. Paul's was magnificent in its solemnity. The musical portion was beautifully rendered, the band and the organ being in such wonderful harmony, whilst the vast volume of sound from the singing of the huge congregation was most striking and impressive.

Believe me,
Yours sincerely,
(Signed) HENRY STREATFIELD.

The Earl of Bessborough, K.P., C.B., C.V.O.

Concurrently with the service in St. Paul's Cathedral, there were services at Derby, Nottingham and Sheffield in memory of members of the Midland Railway Company's staff who had fallen in the war. Other services, largely attended by railway officers and men, and in some instances by the civic authorities, were held in the Cathedrals of Manchester, Carlisle, Bristol, Llandaff, Bangor and Birmingham, in St. Pancras and Hartland Road churches, London ; and in St. John's Church, Cardiff. The North Eastern Railway Company had memorial services in St. Nicholas' Cathedral, Newcastle, York Minster, and Holy Trinity Church, Hull, on the following Sunday. The form of service on each of the occasions here detailed was the same as that followed at St. Paul's.

Flags were flown at half-mast at all railway centres on the day when the chief services were held. So, under all these conditions, there was virtually a national manifestation of sorrow at the fate which had befallen the railway victims of the war, of appreciation for the services they had rendered to the nation, and of sympathy with those they had left to mourn their loss.

Railway Memorials.

Permanent memorials of fallen railwaymen who had been employed on the staffs of individual companies are to be found at many of the leading railway stations throughout the country, at the General Offices of the companies, or elsewhere on railway property. They mostly take the form of tablets on which the names of those on " The Roll of Honour " are inscribed with artistic surroundings which add to their impressiveness. A much more ambitious effort is represented by the memorial arch in course of construction at what will be the main entrance to the Waterloo Station of the London and South Western Railway Company. This arch will be dedicated to men on the staff of the company who fell in the war.

The following detailed description of the work has been given by the architect, Mr. J. R. Scott :—

The sculptural decorations are three groups, two of which are semi-circular in composition, placed on the pylons either side of the arch. The one on the left, representing War, 1914, has a central figure of Bellona, Goddess of War, wild and distraught, clad in scaled armour, astride the world, with flaming torch and naked sword dealing death and destruction. The other, on the right, representing Peace, 1919, has for its motive a figure of Peace seated and enthroned upon the earth, and holding a palm branch and a small figure of winged victory, symbolical of Peace with Victory, bringing abundance and contentment whilst commerce and liberal arts flourish. The panel round the Arch is decorated with war trophies and discs giving the names of the different countries where our men have fought. The whole is surmounted and finished by the central group of Britannia, seated and triumphant holding aloft the sacred torch of Liberty to her own greatness and glory, and for the guidance of her children and children's children and the benefit of mankind in general.

CHAPTER XXIX.

RAILWAY COMPANIES' STEAMSHIPS.

How British railway companies came to be owners of steamships and employed them in connection with their rail services has thus been told by the present writer in Chapter VIII of a little book on "The Case against Railway Nationalisation," published in "The Nation's Library" (Collins) :—

As far back as the year 1836, that is to say, when railways were still in their infancy, George Stephenson included in his scheme for the construction of the Chester and Holyhead Railway the provision by the railway company of a service of boats to run between Holyhead and Kingstown in connection with the company's train services. This was the first attempt to apply a principle afterwards generally accepted, namely, that, cross-Channel traffic being the natural corollary of rail traffic to or from a port, there would be a great advantage in the control of these two branches of transport by one company. It would thus be enabled to give through rates and to work sea and land transport in complete accord and combination without the interruptions that might arise if the cross-Channel transport were in the hands of an independent company.

At the outset the shipping interests offered vigorous opposition to the idea of the railway companies becoming steamship owners. It was not until 1848 that the Chester and Holyhead Railway Company (amalgamated in 1859 with the London and North Western Railway Company) obtained Parliamentary powers authorising them to run in their own name a fleet of steamships which had by that time been already expressly provided for the Irish service by an "independent" company—formed mainly of the Chester and Holyhead Railway Company's directors and largest shareholders. The running of the steamers in connection with the trains had, in fact, been definitely announced for a certain date, whether the railway company got their Parliamentary powers or not.

Other railway companies sought to overcome the difficulty in regard to Parliamentary powers by adopting a like expedient. When, for instance, the South Eastern Railway Company's lines reached Folkestone, in 1844, the company had so much trouble in making satisfactory arrangements with the shipping interests then conducting the cross-Channel services that on the completion of their Dover extension they formed a "South Eastern and Continental Steam Packet Company" which, though nominally independent, was under their control, and was subsequently absorbed by them. The concession of the principle that railway companies could operate their own steamships removed any further difficulty ; though in practice the powers conferred on a railway company in respect to steamships relate only to such ports in the United Kingdom as those to which the company's own lines are laid ; and even then those lines should run alongside the landing-stage of the steamers, the theory of through land and sea transport, with a single transhipment under the control of one and the same company, being thus maintained.

These railway steamship services were further restricted to ports in the British Isles or on the Continent of Europe. In this respect they

represented an expansion of the ferry-boat principle under conditions which offered the advantages of single in place of dual control in the case of through traffic, while the benefits derived by the individual companies in working their sea and their land services as subsidiary the one to the other, and, also, the effect of competition between the companies themselves, led to the provision of fleets of vessels of the finest or of the most useful type, together with the opening from time to time of new ports or new routes extending still further the already abundant transport facilities which this country has enjoyed.

In the result the position on the outbreak of war was that there were fourteen English and Scottish railway companies which owned between them a total of 218 steamships, as follows :—Over 250 tons net : No., 101 ; tonnage, 54,093. Under 250 tons net : No., 117 ; tonnage, 13,848. The aggregate capital cost of these vessels was £6,404,649.

It was agreed between the Government and the Railway Executive Committee that vessels already owned by controlled railway companies on the outbreak of the war, and any purchased or built in substitution thereof, should be regarded as taken up under the Regulation of the Forces Act, 1871, and not under the Royal Proclamation of August 4th, 1914. Subject, also, to certain exceptions, the agreement as to compensation, under the Act of 1871, entered into between the Government and the railway companies was equally to provide for the compensation payable to the companies in respect to the taking over of their steam-vessels. In other words, the companies were guaranteed a revenue on their vessels equal to the net earnings from them in 1913. It was further agreed that the Government would be responsible for all war risks ; that the companies should be responsible for ordinary sea risks only so long as the vessels were not diverted from their ordinary routes, and that, in the event of the boats being so diverted, the Government would become responsible for sea as well as war risks. The Government undertook to refund the cost of restoring the vessels to the same conditions—fair wear and tear in their ordinary business excepted—as when taken over.

The question as to what was to happen in the case of steamers lost whilst in Government service, or not returned to the companies by the Government, was the subject of prolonged negotiations between the Government and the Railway Executive Committee. An arrangement was eventually agreed to as follows :—

In the case of a lost boat, the railway company concerned is to obtain three competitive tenders for a new vessel on the original specification of that lost. From the price of the lowest competitive tender on the original specification, the accrued depreciation in respect of the age of the lost ship is to be abated. This depreciation is to be calculated at 4 per cent. per annum on the original cost from the date of building to the date of loss, the cost of any large alteration (such as reboilering) being deducted from the depreciation and added to the capital at the date on which it is carried out.

Note.—In the case of vessels built on the " time and line " principle where it is not practicable to obtain competitive tenders, vessels may be estimated for on the " time and line " principle or on a single tender, and the Government

will obtain a report as to the amount which it would cost to build a duplicate of the vessel lost. In the event of the railway company not accepting the expert's estimate, the matter shall be submitted to arbitration.

The company will then be entitled to charge in their accounts submitted to the Government Auditor, as a charge to the proved expenses of the company, the net figure thus arrived at, viz., the price of the lowest competitive tender on the original specification less depreciation as described above—

subject to certain specified provisos.

In the event of the Government deciding to retain any particular vessel, the case was to be dealt with in the same way as a loss.

The Government were to take a review every six months or so of the state of railway vessels in their possession, in order to be in a position to tell the railway companies if they considered it would not be worth while to repair any particular vessel. The Government further admitted that compensation should be paid to the railway companies for loss sustained in consequence of (i) vessels being retained after the period of control had ceased, or (ii) vessels being delayed by alteration or repair, or not being available for railway purposes after the control had expired, subject to an agreement as to the amount or the means of assessment of loss. The amounts due for arrears of maintenance of steamboats which had not been commandeered by the Admiralty or the War Office were to be settled at the conclusion of the period of Government control.

In addition to giving up most of their steamers, the railway companies were expected by the Admiralty to pay the crews, coal the ships, provide deck and engine-room stores, mess utensils, bedding, etc., and to incur other items of expenditure in the way of work done to adapt the vessels to Admiralty requirements. Certain of the companies at first protested against these expectations ; but the matter was arranged on the basis of an understanding that all disbursements made in connection with requisitioned steamers during the period that such boats were requisitioned should be treated as working expenses to be recouped from the Government under the terms of their agreement.

There came a time, also, when representatives of the Admiralty were calling upon individual railway companies to surrender certain of their vessels without any prior reference to the Railway Executive Committee, and without any regard for the ability of the said companies to provide for essential services they were under an obligation to maintain.

The position in Scotland, for example, in the summer of 1916, was that the Admiralty had already requisitioned twelve out of the twenty-three steamers with which the Scottish railway companies had, prior to the outbreak of the war, maintained their Forth of Clyde services. This left them with eleven, increased to twelve by the chartering of one substitute by the Caledonian. The services had been greatly curtailed and considerable difficulty was found in providing, not only for passenger traffic, but for mails and merchandise, the latter consisting in large measure of military consignments and general foodstuff. Yet, at the period in question, Admiralty officials were inspecting several of the

remaining vessels in the fleets of the Scottish railway companies with the view, apparently, of taking them over, as well.

One further effect of the situation which thus arose was that while the Admiralty got the railway-owned boats without any payment for them, the railway companies, in order to keep their essential services going, might be compelled to charter other vessels at excessive rates. It was true that the cost thereof would eventually fall on the Government; but the net deficiency of the companies was increased by the amount of the charter payable for the boats hired under these conditions, and the position was prejudiced to this extent.

On being informed of these facts, the Admiralty suggested that when it was proposed by the railway companies to charter other paddle steamers, under the conditions stated, these vessels should be requisitioned by the Admiralty or the Board of Trade in order that the companies might not be under the necessity of paying inflated rates. In this suggestion the Executive Committee concurred, and the dual situation was met by an arrangement to the following effect:—

> Save in emergency, no railway-owned boat to be requisitioned by the Admiralty except after consultation and after agreement with the Railway Executive Committee. In the event of disagreement, the matter to be submitted, when time permits, to the War Committee, it being understood that on occasion immediate requisitioning might be imperative.
>
> If it be agreed that any railway-owned boat is to be handed over to the Admiralty for special service, and if it is considered by the Board of Trade essential to replace the boat for railway service, the Admiralty to endeavour to requisition a suitable vessel, payment therefor being arranged in such a manner as may be agreed between the Treasury and the Railway Executive Committee.

The making of all these different arrangements was naturally based on the experiences gained from time to time as the various phases of the combined naval and military situation developed under conditions which could not have been foreseen and provided for in advance. Meanwhile, the requisitioning of railway-owned steamers by the Admiralty had been continued with such activity that by the third week in October, 1914, the number then already commandeered was no fewer than sixty-four. Some of the companies, and notably the Lancashire and Yorkshire, the Great Eastern, the Great Central and the South Eastern and Chatham, had then had practically the whole of their own boats absorbed. Companies were coming to the relief of one another as far as they could. Six boats owned by those able, at the time, to spare them had been lent to other companies which the Admiralty had left with a number inadequate to provide for their indispensable and obligatory services. The Great Central, for example, lent three of their boats to the Great Eastern in order that the latter could maintain communications with Rotterdam in the interests of this country's food supplies.

It began to be felt, about this time, that further requisitions upon railway-owned steamships would endanger the maintenance of traffic in foodstuffs from the Continent, Ireland and the Channel Islands. The

declaration was, in fact, made that the resources of the railway companies must be considered at an end so far as Admiralty requirements were concerned unless the course should be taken of closing down the " essential services " as an emergency measure.

The responsibility for action in this direction was left with the Government, and the situation did, in effect, become so far urgent—especially in view of the greatly increased activity of the enemy submarines—that almost continuous demands for fresh sacrifices by the railway companies were made upon them, these being only in part relieved by the arrangements as to the requisitioning by the Admiralty or the Board of Trade of other vessels which the railways might use in place of those they surrendered.

In the result, the total number of railway steamships (apart from tugs, etc.) requisitioned by the Government was 126, these being owned as follows :—

Company.	Number.
Caledonian	8
Glasgow and South Western	9
Great Central	16
Great Eastern	8
Great Western	12
Lancashire and Yorkshire	31
London and North Western	4
London and South Western	5
London, Brighton and South Coast	4
L.B. & S.C. and L. & S.W. Joint	4
Midland	7
North British	5
South Eastern and Chatham	13
Total	126

These steamers were employed for a great variety of purposes. They were used as troop transports, mine-sweepers, mine-layers, submarine-chasers, sea-plane carriers, convoy ships, colliers, armed boarding-ships and ambulance transports. They carried immense quantities of ammunition and stores alike to Scapa Flow, to France and to the Mediterranean. To France, also, they took aeroplanes and railway vehicles. They conveyed the King to and from France on the occasion of his visits to the Western Front, and they were repeatedly requisitioned for special cross-Channel journeys by members of the Government. They brought thousands of Belgian refugees to this country in the early days of the war, and they helped to repatriate them when the hostilities came to an end. They also took to Holland, *en route* for their own country, many German civilians who had been under detention and whose further residence here was not desired.

The fact that the Government were able not only to requisition such a fleet of railway-owned steamers under the Act of 1871 but to put them to so many different uses was of great advantage to the country in the prosecution of the war, and there can, also, be no doubt that the financial

arrangement made was an exceptionally good one—for the Government. Some of the services, and especially those to and from Ireland, had been run at a loss in 1913, which thus became an exceptionally unfavourable one for the companies as a basis year, the compensation to be paid being lessened proportionately; while, so far as the vessels which had been unremunerative in 1913 were concerned, the Government got the use of these—and among them were some exceptionally fine boats—for nothing at all. As for the compensation that was paid, it in no way compared with the abnormal profits made by vessels running in connection with such railway services as could still be carried on, nor could it be regarded as adequate in respect to the special uses to which the requisitioned boats were put and to the exceptional nature of the risks they ran in consequence of such use. If the railway companies had been free to make their own bargain they would have obtained terms much in advance of their steamship earnings in 1913, and they would, at the same time, have been in a position to ensure the effective covering of the exceptional risks in question.

What these risks really amounted to can best be shown by the following list of railway-owned steamships lost during the course of the war :—

Railway-Owned Steamships Lost During the War.

Company.	Name of Vessel.	How Lost.	Date.
Caledonian . .	*Duchess of Hamilton*	Mined in the North Sea	Nov. 29, 1915
,, . .	*Duchess of Montrose*	Mined off Dunkirk	March 18, 1917
Glas. & S.W. .	*Neptune*	Mined in English Channel	April 20, 1917
,, ,, .	*Mars*	Sunk in collision off Harwich	Nov. 18, 1917
Great Central .	*Immingham*	Sunk in collision off Lemnos	June 12, 1915
,, ,, .	*Leicester*	Mined in English Channel	Feb. 12, 1916
,, ,, .	*Chesterfield*	Torpedoed in Mediterranean	May 18, 1916
,, ,, .	*Wrexham*	Wrecked in White Sea	June 19, 1918
Great Eastern .	*Brussels*	Captured by enemy in North Sea	June 23, 1916
,, ,, .	*Clacton*	Torpedoed in Mediterranean	Aug. 3, 1916
,, ,, .	*Colchester*	Captured by enemy in North Sea. Sunk while in enemy service	Sept. 21, 1916
,, ,, .	*Copenhagen*	Torpedoed in North Sea	March 5, 1917
,, ,, .	*Newmarket*	Torpedoed in Mediterranean	July 16, 1917
,, ,, .	*Louvain*	Torpedoed in Mediterranean	Jan. 20, 1918
Great Western .	*Roebuck*	Sunk in collision at Scapa Flow	Jan. 13, 1915
Lanc. & Yorks. .	*Don*	Torpedoed off Blyth	May 8, 1915

Company.	Name of Vessel.	How Lost.	Date.
Lanc. & Yorks. .	*Dearne*	Detained at Hamburg on outbreak of war, and lost whilst in enemy's hands	Dec. 22, 1915
,, ,, .	*Hebble*	Mined off Sunderland	May 6, 1917
,, ,, .	*Rye*	Torpedoed between Newhaven and France	April 7, 1918
,, ,, .	*Unity*	Torpedoed between Newhaven and Calais	May 2, 1918
L. & Y. and L. & N.W. Joint	*Duke of Albany*	Torpedoed in North Sea	Aug. 24, 1916
L. & N.W. . .	*Tara*	Torpedoed in Mediterranean	Nov. 5, 1915
,, ,, . .	*Anglia*	Mined in English Channel	Nov. 17, 1915
L. & S.W. . .	*Normandy*	Torpedoed on passage to Cherbourg	Jan. 25, 1918
,, ,, . .	*South Western*	Torpedoed on passage to St. Malo	March 16, 1918
,, ,, . .	*Sarnia*	Torpedoed in Mediterranean	Sept. 12, 1918
L.B. & S.C. . .	*Cherbourg*	Struck a mine 7 or 8 miles from Boulogne	Jan. 18, 1916
,, ,, . .	*Anjou*	Struck a mine in Bay of Biscay	July 18, 1917
,, ,, . .	*Maine*	Torpedoed whilst on voyage Newhaven-Dieppe with ammunition	Nov. 21, 1917
L.B. & S.C. and L. & S.W. Jt.	*Duchess of Richmond*	Mined in Mediterranean	June 28, 1919
Midland . .	*Donegal*	Torpedoed when bringing wounded from France to Southampton	April 17, 1917
S.E. & C. . .	*Hythe*	Sunk in collision in Dardanelles	Oct. 28–29, 1915
,, . .	*The Queen*	Sunk by enemy torpedo-boat destroyers between Boulogne and Folkestone	Aug. 26, 1916
,, . .	*Achille Adam*	Sunk by enemy submarine in English Channel	March 23, 1917
,, . .	*Onward*	Took fire at Folkestone. Scuttled to save pier	Sept. 24, 1918

Two of the Great Eastern vessels in the above list, the *Brussels* and the *Colchester*, had not been requisitioned by the Government for naval purposes, but both were carrying on war work at the time of their capture, though still under the company's control. It was from the *Brussels* that the Germans took Captain Fryatt, the victim of their subsequent judicial murder.

The London and South Western steamers *Normandy* and *South Western* were both working in the company's service when torpedoed in the Channel.

All four of the South Eastern and Chatham Company's steamers given on the list had been requisitioned by the Government, though two of them, the *Queen* and the *Onward*, were working under company's control when they were lost.

CHAPTER XXX.

RAILWAYS AND AIR-RAIDS.

Few persons, probably, beyond those who were immediately concerned in the arrangements made have yet realised the important part taken by British railway companies in the adoption of measures during the period of the Great War for the defence and protection alike of London and of the country in general against enemy air-raids. The average railway traveller knew by his personal experiences in the early days of those raids that the companies were adopting a variety of precautions, and he grew accustomed to the nightly cry of the railway porters, "All blinds down, please"; but the action taken then and subsequently by the Railway Executive Committee and the companies they represented went much further than this, although it was not deemed expedient at the time to make public all that was done.

Early Organisation.

From the beginning of the war it was regarded as an assured certainty that enemy air-raids on this country—as distinct from air-reconnaissances—would be attempted, and the strength of our defensive air-forces became a matter that seemed to demand immediate attention.

The British Air Service consisted on August 4th, 1914, of a Naval Wing, known as the Royal Naval Air Service ("R.N.A.S."), controlled by the Admiralty; a Military Wing, known as the Royal Flying Corps ("R.F.C."), controlled by the War Office, and a Central Flying School; but the fact was recognised that much call would arise for the activities of these organisations in the prosecution of the war overseas, whatever responsibilities might devolve upon them in respect to home defence as well, and the question was raised, in the first instance, as to whether special measures should not be adopted for the protection of London—certain to be the main objective of enemy raiders, if they should come.

Early in September, 1914, a conference convened by Sir Edward Henry, then Commissioner of Metropolitan Police, and presided over by Lord Emmott, was held to consider what steps should be taken in this direction; and among those attending was the late Mr. (afterwards Sir) Guy Calthrop, General Manager of the London and North Western Railway Company, who represented the Railway Executive Committee. A memorandum setting forth various points which, in the opinion of the conference, called for consideration, was drawn up, and copies were distributed among members of the Railway Executive; but at that time

it was regarded as sufficient to leave the railway companies directly concerned in any prospective raid then thought possible to take such action in respect to the working of their lines as they might deem necessary or expedient. Precautionary measures were adopted accordingly on their own initiative by several of the companies then acting, in this matter, independently of one another and of the Railway Executive.

In October, 1914, the Office of Works informed the Railway Executive that arrangements had been made, in connection with street-lighting arrangements, etc., to advise certain local authorities of the approach of hostile aircraft, and that this information would be sent to the committee by the Admiralty, which had taken control in September over the anti-aircraft organisation. Thereupon the committee arranged to pass the information on, by telephone, to the railway companies affected in order that lights in their stations and goods yards could be either reduced or extinguished until any possible danger had passed.

Towards the end of October the Admiralty suggested to the Railway Executive that, inasmuch as the lighting of trains had been found by our own airmen to render the railway lines very conspicuous at night, so that they were likely to become excellent guides for enemy aircraft making their way to London, notices should be placed in each railway compartment asking the passengers to keep the blinds drawn at night. The companies were advised of this and action was taken accordingly.

The first raid on England by enemy aircraft occurred on December 24th, 1914, when an aeroplane dropped a single bomb on Dover. Another aeroplane passed over the Kent coast the following day and got as far as Erith, where it was turned back. Zeppelins paid their first visit on January 19th–20th, 1915, passing over Norfolk. By the middle of the following August there had been fourteen Zeppelin raids, mainly over the Eastern and the North-Eastern counties, involving the deaths of ninety-two persons and injuries to over 200.

It was now decided by the Admiralty, in consultation with the Commissioner of Metropolitan Police and the First Commissioner of Works, to discontinue the arrangement under which notification of the approach of enemy aircraft was being sent to the Railway Executive Committee, and that body was thus no longer in a position to communicate to the companies any warning which came from an official source. The individual companies were, accordingly, asked themselves to advise the Executive Committee by telephone of any information that might be sent to them by their staff concerning aircraft attacks in order that such information should be given alike to the other companies, for their benefit, and to the Admiralty, in the public interests.

During the Zeppelin raid over Kent, Essex and London on August 17th, 1915, when ten persons were killed and forty-eight were injured, all lights in trains and stations on the Great Eastern and the South Eastern and Chatham systems had, by direction of the Railway Executive Committee, been extinguished between 11 p.m. and 1.15 a.m.; but these measures were not considered adequate by the authorities, who subse-

quently suggested that on any future occasion all traffic on the lines of the said companies leading from the coast to London should be stopped while the raids were taking place.

This proposal was viewed by the Railway Executive with some degree of apprehension, the more so because the stopping of all traffic on the Great Eastern and the South Eastern and Chatham would interfere with the running of trains on other lines beyond what was then regarded as the air-raid danger zone. Representations to this effect were made by the Executive Committee, who further pointed out that the railway companies were no longer receiving any official intimation of the approach of enemy aircraft. They undertook that, if the previous arrangement could be resumed, such safeguards should be adopted as would avoid any risk of trains becoming a means of indicating to the raiders the direction of London.

By August, 1915, various companies directly concerned in the raids by reason of their East Coast communications, and including more especially the North Eastern, the Great Eastern and the South Eastern and Chatham, had in effective operation certain anti-air-raid schemes which, in accordance with the original understanding, they had devised and introduced on their own account. These schemes, as then already in operation or as developed a little later, differed somewhat in their details ; but, speaking generally, they related to the sending of information to the company's headquarters, by station-masters or other members of the staff, of information concerning the raiders, and also, to the measures to be taken in regard to the movement or the stopping of traffic, to goods-yard working, and to the reduction or extinction of lights when the occasion arose. Apart, however, from the lack of uniformity in the schemes of the different companies, there were a number of questions of a technical character concerning which some degree of uncertainty prevailed ; and in order that the whole situation, including these technical questions, might be thoroughly considered, the Railway Executive arranged that a sub-committee, comprising the Superintendents and Locomotive Superintendents of the North Eastern, Great Northern, Great Eastern, South Eastern and Chatham, and London, Brighton and South Coast Companies, should meet, under the chairmanship of Mr. (afterwards Sir) H. W. Thornton, General Manager of the Great Eastern Railway, and report as to the system that could best be adopted for warning the railway companies of the approach of hostile aircraft, and the safeguards to be adopted for dealing with any such emergency.

The meeting, on September 10th, 1915, of this sub-committee of experts was attended, also, by a Flying Corps officer who, on the strength of his own experiences, recommended that the whole of the railway traffic in the districts likely to be affected should be stopped as soon as the approach of hostile aircraft was signalled and before the coast was reached, trains already in motion pulling up where they stood and remaining on the same spot until the raid was over. The sub-committee appears to have been impressed by this expression of opinion, one of its recommenda-

tions being that railway traffic should, at least, be stopped if the reports seemed to indicate that the hostile aircraft was endeavouring to find a way to London or any other large centre. The request which had been made to passengers to keep the blinds down was considered ineffectual, partly because it was not always complied with, and partly because there were many third-class carriages which had no blinds.[1] Rear-lights and head-lights on trains afforded no guidance to aircraft, but the fire-boxes of engines should be so screened that there could be no glare during the process of firing, and the emission of sparks and light from the engine chimneys should be avoided. Lights in stations, signal boxes, etc., should be obscured, though it was considered both unnecessary and undesirable to interfere with signal lights.

It was further regarded by the sub-committee as essential that the railways likely to be affected by air-raids should have official warning of the approach of hostile aircraft and full information as to their movements on arrival. The Admiralty or the War Office would doubtless have such information available, and it was recommended that they should be asked to forward it to the Executive Committee, which, by means of its private telephone system, could send it on promptly and safely to the headquarters of the companies concerned. These companies, in turn, should communicate to the Executive Committee—for the general advantage—any independent knowledge they might obtain concerning the movements of the raiders. It was also recommended that the operation of these defensive measures should be facilitated by each railway company having on duty at its headquarters during the night a thoroughly responsible and capable man who would deal with the messages and act on his own initiative in any emergency that might arise.

On receiving the report of this meeting, the Executive Committee sent instructions to the railway companies operating in the Eastern and South-Eastern districts to reduce or screen the lights in their signal boxes and to adopt various other precautions, while an arrangement was made through the Board of Trade that, whenever the Anti-Aircraft Department had knowledge of hostile aircraft being within twenty or thirty miles of the coast, information should be sent to the Executive Committee that a raid might be expected. The committee was thus to receive a definite warning which it could communicate to such of the companies as the news might concern. The other proposals made by the sub-committee were also approved.

Lights on Railways.

A few days after this meeting of Superintendents and Locomotive Superintendents, a conference of representatives alike of various State

[1] Door windows unprovided with blinds were either painted or (as on the Isle of Wight) covered with brown paper. The unprotected windows of the guards' vans or of electric trains were also painted over. Another expedient adopted was that of placing shades over the lights in the carriages, the shades being, at the same time, utilised for the purposes of advertisements.

Departments and of the Railway Executive was held to consider what policy should be followed in regard to the reduction or the extinction of lights on railways during the coming winter. Among other recommendations then made was one that the Home Office should obtain penal powers for dealing with railway passengers who disregarded the instructions to lower the blinds.

Much more discussion, together with various experiments concerning lights on railways, followed, and in December, 1915, the Home Secretary issued an Order under the "Defence of the Realm (Consolidation) Regulations, 1914," in which it was said (*inter alia*) :—

> The intensity of the lighting of railway stations, sidings, goods yards, docks, etc., must be reduced to the minimum that will suffice for the safe and expeditious conduct of business there ; the tops and sides of all arc and other bright lights which cannot be dispensed with shall be shaded or painted over.
>
> Passengers in railway carriages which are provided with blinds MUST keep the blinds lowered so as to cover the windows. The blinds may be lifted in case of necessity when the train is at a standstill at a station, but if lifted must be lowered again before the train starts.

The display in railway carriages of notices reproducing the latter of these requirements, and intimating that, under the Defence of the Realm Regulations, heavy penalties would be incurred for non-compliance, had a certain, though somewhat limited, effect on railway passengers ; but the reduction of lighting in stations, goods yards, etc., led to the traffic, both passenger and goods, being so seriously hampered in the London district that, in view more especially of a prospective great increase in Government traffic, the Admiralty were asked to assent to a relaxation of the regulation, provided that the railway companies continued to lower or extinguish the lights altogether on their being advised of the approach of hostile aircraft. To this it was replied that the Admiralty had no objection to a reasonable increase in lighting, under the conditions stated, and some degree of improvement in railway working was thus secured.

Extension of Precautionary Measures.

A raid which occurred on the night of January 31st, 1916, had shown that the Zeppelins were likely to come much further inland than had previously been anticipated. On this occasion, instead of keeping to the Eastern, North-Eastern and South-Eastern Counties and the London area as they had previously done, the raiders passed over the Midlands, dropping, it was estimated, about 350 bombs, killing 67 persons and injuring 101.[1]

A fortnight later, control of the home defences against enemy aircraft was taken over by the War Office, and, as the result of a conference between the various authorities concerned, including the Railway Execu-

[1] One of the raiders was afterwards reported to have reached a point within about twenty-five miles of the Welsh coast. See p. 447.

tive Committee, there was now issued by the Home Secretary an order applying to the railways in the Central and North-West districts of England the regulations already in force in the Eastern Counties and the London area in regard to the reduction of lighting in stations, sidings, goods yards, etc.

The Scottish Railway Companies.

It was further pointed out by the Railway Executive that the arrangements made for the circulation among English railway companies both of warnings as to prospective raids and of news as to the movements of hostile aircraft did not apply to Scotland, which should be included in the general scheme of defensive action in view of the now wider range of Zeppelin visits. The suggestion was accordingly made to the General Manager of the North British Railway Company that he should arrange a meeting between representatives of the Scottish Command and of the Scottish railway companies in order that the necessary instructions could be formulated and arrangements made for keeping the Scottish companies fully advised as to the movements of hostile aircraft over Scotland.

This communication was addressed to the North British as the "Secretary Company" for the Scottish railway companies in general in regard to troop transport and other military arrangements. The Control Office of the North British Operating Superintendent was, consequently, already in direct telephonic communication with the Headquarters, Scottish Coast Defences, responsible for the issue in Scotland of air-raid warnings.

The meeting suggested by the Railway Executive was held forthwith, and arrangements were made for the supply to the North British Control Office of air-raid warnings issued by Headquarters, Scottish Coast Defences, while the North British was not only to adopt measures for the protection of its own lines, but to advise and consult with the other Scottish companies as to what action they, also, should take. The North British was, in turn, to transmit to Headquarters, Scottish Coast Defences, all information which that company and the other Scottish railway companies might receive from various parts of their systems as to the movements of enemy aircraft.

The foresight shown in thus extending the application of anti-aircraft measures to the Central and North-Eastern districts of England and to Scotland was soon to be confirmed, since on March 5th, 1916, the Zeppelins passed over Yorkshire, Lincolnshire, Rutland, Huntingdon and Cambridgeshire in addition to Norfolk, Essex and Kent, while a raid was made on the South-Eastern counties of Scotland on April 2nd. On the latter occasion it was found possible by the North British, thanks to the complete telephonic communication available, to locate the Zeppelins as soon as they crossed the coast-line and to keep in close touch with their movements during the whole of the raid, reports thereon

being made concurrently to the Scottish military authorities. The raiders paid a further visit to the South-East Coast of Scotland just a month later.

Use of Railway Wires.

Useful action was taken by the Railway Executive in still another direction.

During any extensive air-raid of the type then favoured by the enemy, the normal telephonic facilities would, it was seen, be very heavily taxed, and, as a further result of the raid of January 31st, 1916, the various naval and military authorities throughout the country whose duty it would be to communicate information as to the movements of hostile aircraft were informed that, in case of difficulty, they could apply to the station-master at any local railway station for the transmission of information by him viâ the headquarters of his line and the Railway Executive Committee's offices in London.

The utility of this arrangement was especially emphasised in March, 1916. On the last day of that month the Zeppelins passed over the Eastern Counties and the North-East Coast. The casualties on that occasion were forty-three persons killed and sixty-six injured. A recent blizzard had caused an almost unprecedented amount of damage to the Post Office telegraph and telephone wires; but several of the railway companies accepted air-raid-warning messages for transmission over their own wires, and the assistance thus rendered by them was afterwards declared to have been of great practical value. The Postmaster-General thereupon, after communication with the Railway Executive, instructed the various District Telephone Managers to approach the railway companies with a view to arranging some scheme under which the railway telegraph and telephone lines could be utilised by them in the event of an emergency. The Executive Committee supported this proposal by sending to the controlled companies a Circular Letter suggesting that they should accede to the request, and informing them that there was no idea of making provision for the general use of railway wires, the only purpose aimed at being the securing of alternative means for the transmission of air-raid warnings. All the companies thus appealed to readily acceded to the suggestion made, so that by the spring of 1916 the entire network of telegraph and telephone wires throughout the country was available for the communication of news of the raiders' movements to those concerned in the taking of defensive action.

The Stoppage of Traffic.

A succession of raids in the early part of 1916 threw doubt upon the expediency of the arrangements made as the result of the meeting held on September 10th, 1915, for a general hold-up of railway traffic in districts which, on the approach of raiders being announced, it was thought *might* be visited by them.

On the occasion, for instance, of the raid on the Midland Counties on January 31st, 1916, the stoppage of traffic in London for periods of up to two hours or more led to the principal railway stations there being packed with dense masses of belated passengers who, in most cases, had only a glass roof over their heads as protection against any bomb dropped among them—and there were times when the raiders seemed to be making special efforts to destroy certain of the railway termini in London. Such was the state of congestion that at the Victoria Station of the London, Brighton and South Coast Company—without taking into account the Victoria Station of the South Eastern and Chatham, alongside—there were from 3,000 to 4,000 persons waiting for the trains to resume their running. Under such conditions as these there were possibilities of an appalling loss of life had bombs actually been dropped in the midst of so great a crowd of people. Taking, also, the experiences of the Great Western Railway Company, the aggregate delays to their trains in the London and Birmingham districts on account of this one raid amounted to 195 hours in the case of passenger trains, and 650 hours in that of goods trains, although the only damage done to the company's property by the raiders was a small fire, caused by a bomb dropped at Dudley and readily extinguished.

On March 19th, 1916, a seaplane visited East Kent and dropped bombs on Dover and Ramsgate, killing nine persons and injuring thirty-nine. This was a comparatively minor event from a geographical standpoint, since it affected only these two coast towns ; but, for some reason or other, it considerably disturbed the naval and military authorities, who proceeded to take precautionary measures on a scale far in excess of what were afterwards found to have been actual requirements.

At 11.15 p.m. orders received from General Headquarters, Home Forces, led to the putting out of all lights, and the stopping of all traffic, on the systems of the South Eastern and Chatham, London, Brighton and South Coast and Midland (Tilbury) lines. They also involved the holding up of all traffic into or out of London on the London and North Western, London and South Western, Midland, Great Western, Great Eastern, Great Central, Great Northern, Metropolitan and Metropolitan District Railways. These various conditions continued until 12.18 a.m., when it was announced that normal working might be resumed. Inasmuch as March 19th was a Sunday, the inconvenience caused was less than it would have been on a weekday ; but it was, nevertheless, sufficiently serious, while to practical railwaymen it appeared that if, in the midst of such a widespread stoppage of traffic, they were suddenly called upon to carry out some exceptionally important emergency movement—in other words, to convey troops to some point on the coast where a landing was being attempted by the enemy—they would be taken at a very grave disadvantage. There seemed, further, to be something altogether defective in a system under which the railway traffic could be dislocated over so wide an area when the real need for stopping it had not gone beyond the district of Sheerness.

Then, among still other instances of the same type, on the night of March 31st–April 1st, 1916, a Zeppelin raid was made on Lincolnshire, Essex and Suffolk, and on this occasion, as the result of advices from the Home Forces Headquarters received through the Railway Executive Committee, there was an extinction of railway lights and a stoppage of all railway working in areas as far away from the counties mentioned as Basingstoke, Banbury, Cheltenham, etc., although none of these districts were visited by the raiders. The dislocation of traffic—as the result, not of what the raiders themselves did, but of our own " precautions " against what they might conceivably do—was once again most serious. On one line alone eight passenger trains had to be cancelled, and the starting or the arrival of others was delayed for periods of up to eight hours or more. In the case of two ocean specials, London bound, each was held up, quite unnecessarily, at a country station for about four hours and a half. Goods trains also suffered detentions of many hours ; some stopped short of their destinations, and some were cancelled altogether.

Another shortcoming in the existing arrangements was experienced more especially on the occasion of the raid of March 19th, 1916. Apart from orders sent on to them from General Headquarters, Home Forces, the railway companies in various parts of the country received separate, distinct, and, in some instances, wholly conflicting orders alike from General Officers in Command of Commands and from Admiralty Officers in charge of various ports as to what they were to do or were not to do. These orders were, apparently, given by the officers in question on their own initiative and without, it might be, their having any exact information concerning the raid or any personal experience of the exigencies of railway operation. Thus the further question arose whether there should not be such co-ordination of authority as would lead to all requests for the stoppage of rail traffic in any part of England or Wales, on the occasion of air-raids, being made through the Railway Executive Committee, to which body the companies would then alone look for their instructions in case of emergency, taking no action until so advised by the committee.

Precautionary Measures Revised.

All these questions and complications led to the holding of a conference, on April 2nd, 1916, between Sir Herbert Walker, Sir Francis Dent, Mr. H. W. Thornton and Mr. Arthur Watson, on behalf of the Railway Executive, and representatives of the War Office, the Royal Flying Corps and General Headquarters, Home Forces.

It was agreed to recommend, among other things, that, in view of the paramount importance of not interfering with the railways more than was absolutely necessary, traffic should no longer be completely stopped when an order to " Take Air-Raid Action " was sent out. Trains should continue to run at such reduced speed that it would not be necessary

to keep the fire-boxes of the engines open. Instructions should be given that, during the continuance of a raid, the fire-boxes should be opened for stoking purposes as seldom and for as short a time as possible. When practicable the stoking should be done whilst the engine was under cover. A train running at this reduced speed and under these conditions might be visible to airmen ; but the small amount of risk that it would afford a guide to the enemy would, it was thought, be of much less disadvantage than if the entire train service were stopped.

It was further decided to recommend that the Railway Executive should be the recognised body for communicating orders to railways in England and Wales (except as regards certain small lines) to "Take Air-Raid Action," the North British Railway Company distributing among the Scottish companies all orders communicated to them by the Scottish Command. The said orders for taking action on the railways (in the way of reducing or extinguishing lights, or otherwise) were to be given to the Railway Executive Committee by General Headquarters, Home Forces.

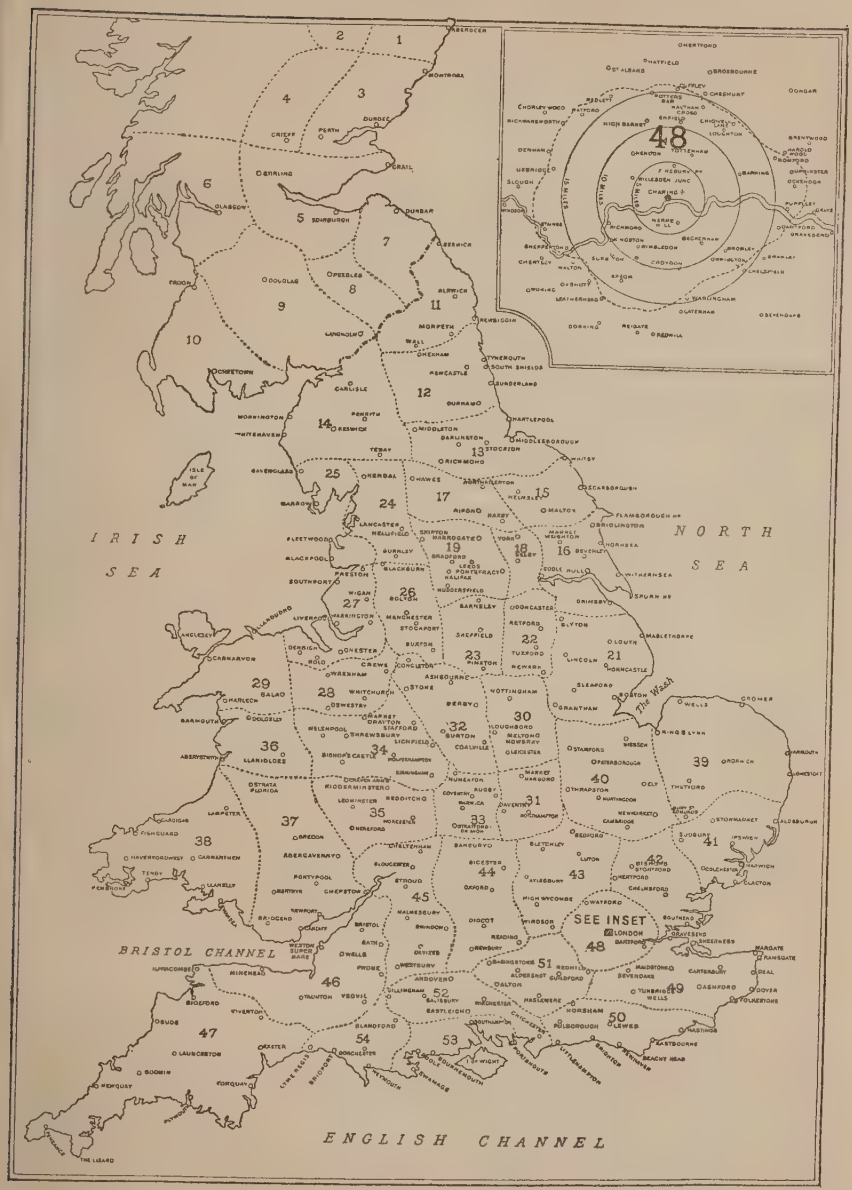
An Anti-Air-Raid Scheme.

These recommendations—which were duly approved by the Field-Marshal Commanding-in-Chief, Home Forces—provided a solution for the main difficulties the companies had experienced, and by the end of April, 1916, measures had been adopted to secure a more effective organisation of the whole system in regard to railways and air-raid precautions.

On the subject of lighting, it was suggested to the companies that there might be a further reduction of lights in stations, signal boxes, goods and marshalling yards, etc., for normal lighting, and that, in the event either of a raid or of action being ordered in a particular district, the company concerned should extinguish any prominent lights and reduce others to the absolute minimum consistent with the safe carrying on of railway working.

Observations made by air pilots having definitely established the fact that railway signals were not discernible from the air at the height at which hostile aircraft were likely to fly, it was not considered necessary that such signals should be extinguished during a raid, though, in certain cases—as, for example, signals near the coast and facing the sea—it was recommended that they should be provided with metal hoods of a type designed by the Great Eastern Railway Company. Nor was there thought to be any need that head and rear lights on trains should be extinguished. In regard to the lowering of blinds in trains, the existing regulations were still to be observed, while an amended Home Office Order fixed the time for drawing them as half an hour after sunset for all parts of the country.

Subject to the conditions in regard to stoking already mentioned, passenger trains might continue running at the reduced speed of fifteen miles an hour and goods trains at that of ten miles an hour when "Air-



MAP SHOWING HOW ENGLAND, WALES AND SCOTLAND WERE DIVIDED INTO DISTRICTS TO FACILITATE THE DISPATCH OF ANTI-AIR-RAID MESSAGES TO RAILWAY COMPANIES OPERATING THEREIN.

Raid Action " for specified areas was ordered. The risk of glare from the fire-boxes was to be further decreased by covering the engine " cabs " with tarpaulins, when necessary. Work might be continued in goods, marshalling and locomotive yards, etc., so far as this could be done with reduced lighting, though whistling and the blowing off of steam were to be avoided, and the work was to be carried on with as little noise as practicable.

Then, also, for the more convenient collection and transmission of information as to the movements of hostile aircraft and for the issuing of warnings or orders in regard to emergency measures to be taken in particular districts, as distinct from others where they might not be necessary, the Railway Clearing House Official Railway Map for Scotland was divided into ten districts, and the corresponding map for England and Wales into forty-three districts (numbered from 11 to 54, with the exception of 20), lists being also drawn up to show the sections of railway line comprised in each of such districts and the particular railway company or companies to which those sections belonged. The districts were of a size and shape appropriate to the available Post Office telephone facilities. In three instances all the sections in a particular district formed part of the system of a single company—the North Eastern. In the remaining districts the number of companies concerned in each instance ranged from two to twelve, the last-mentioned being the London area, in which were included Watford, Dartford, Epsom, Loughton, Waltham Cross and Orpington.

As a precautionary measure, the whole of Wales was included in the scheme no less than the whole of England, since there was no knowing, at this time, how far across country the Zeppelins might not succeed in getting. Thus, Area 29 was defined as follows :—

Area.	Railways.	Section.
29	L. & N. W. .	Llysfaen and all west thereof.
	Cambrian . .	Llanbedr to Pwllheli.
	G. W. . . .	Bala Jct. to Festiniog and Pontnewydd.
	Festiniog . .	All.

It was, of course, not probable that the raiders would ever drop their bombs on the sands of Pwllheli or among the quarries of Blaenau-Festiniog ; but there was no disposition to leave anything to chance. Preparations were made, as far as possible, for whatever might happen.

For the purposes of the general scheme, the companies operating in the English and Welsh areas on the basis here described were divided into three categories.

In Category I were included fourteen companies which were to receive at their headquarters aircraft advices direct from the offices of the Railway Executive Committee, namely, Great Central, Great Eastern, Great Northern, Great Western, Lancashire and Yorkshire, London, Brighton and South Coast, London and North Western, London

and South Western, Metropolitan, Metropolitan District, Midland, Midland (Tilbury), North Eastern, and South Eastern and Chatham. This arrangement was facilitated by the fact that the Railway Executive Committee had its private telephone wires alike to Government offices (including General Headquarters, Home Forces), London termini and the railway centres at Derby, York and Manchester.

In Category II were put eleven companies which were to receive advices from the Executive Committee viâ the headquarters of another railway company, as, for example, the Cambrian, to be advised by the Great Western; the Cheshire Lines, to be advised by the Midland, and so on.

In Category III there were twenty-three companies which were to receive advices through Post Office telephone exchanges, among those included in this third list being the Alexandra Docks and Railway, and the Barry, Cardiff, Furness, Isle of Wight, Isle of Wight Central, Liverpool Overhead, Maryport and Carlisle, Midland and Great Northern Joint, North Staffordshire, Taff Vale and Wirral lines.

To assist in the distribution of the official warnings and orders among these smaller railway companies, a General Warning Control was created, and the forty-four districts into which England and Wales had been divided were, in turn, subdivided into six District Warning Controls, known respectively as the Newcastle, Hull, Liverpool, Birmingham, London and Portsmouth Controls. The Liverpool Control took in North Wales as far south, almost, as Barmouth. The remainder of the Principality was allocated to Birmingham. The London Control extended, in one direction, from Cromer to Penzance, and in another from Brighton to Stamford. General Headquarters, Home Forces, communicated through the Central Control with the District Controls, and the latter passed the messages on to the Post Office telephone exchange for distribution.[1]

Advices given to companies in Categories I and II were to apply only to the districts they specifically mentioned. From the railway headquarters they would, immediately on arrival, be sent on to the responsible officer or officers in the district affected. Those transmitted to companies in Category III were to apply to the whole of the railway, in each instance.

Under the arrangements already made with the Scottish Command, the North British Railway Company would continue to represent the Executive Committee in Scotland for the purposes of hostile-aircraft defence; though in districts where sections of the Scotch railways passed into England the companies would be warned, on the West Coast by the London and North Western, and on the East Coast by the North Eastern.

The messages to be sent to the railway companies under these conditions were of four kinds.

[1] Certain modifications in these arrangements were subsequently introduced.

The first was no more than "WARNING ONLY—DISTRICT No. ——." It was designed to give (when time permitted) a preliminary warning of approach of hostile aircraft and to ensure the retention or the summoning of an emergency staff in accordance with plans already laid down for the adoption, in case of need, of such measures as might be necessary or expedient.

When it was known that hostile aircraft were approaching or in the vicinity of a certain district, there would be sent the second message, "TAKE AIR-RAID ACTION—DISTRICT No. ——." This would lead to the immediate application, throughout the district specified, of a pre-arranged programme for reduction or extinction of lights (exclusive of signal, tail and side lights, which were not to be interfered with); slowing down of trains; prevention of the emission of sparks; avoidance of glow from fire-boxes, whistling, and the blowing off of steam. Work was to be continued in goods yards, etc., but with as little noise as practicable. Military authorities at certain places on the coast were to have power to give the "Take Air-Raid Action" Order, but no other military, naval or police officers had power to issue orders to the railway staffs with regard to the working of the railways during air-raids. Any instructions or orders they might seek to give were to be communicated to the railway headquarters. In the event of telephonic or telegraphic communication being cut off, the responsible railway official was to act as though he had received from those headquarters the order to "Take Air-Raid Action."

The third message, "RESUME NORMAL CONDITIONS—DISTRICT No. ——," was to be sent when it was considered that the immediate danger which had led to the "Take-action" order no longer existed as concerned the district mentioned; though, in effect, it would cancel the second message only, the emergency staffs made available as the result of the first message being retained in case they should again be wanted.

The fourth and final message, "ALL CLEAR," indicated that the conditions which led to the "Warning Only" had passed, and that the emergency staff need no longer be kept on.

All four messages were to be forwarded under military authority, the first being known as "Field-Marshal's Warning," the second and third as "Field-Marshal's Orders," and the fourth as the "Field-Marshal's Notice."

This comprehensive scheme was put into operation in May, 1916, and it became forthwith a most powerful instrument in helping to thwart the plans of the raiders. In the raid, for example, of September 25th–26th, 1916, "warning" notices were transmitted to railway companies in thirty-six out of the forty-three districts in England and Wales, and "action" orders to twenty-five, the last-mentioned including Lancashire and Cheshire in the North, and Wilts and Hants in the South; while in the raid of October 1st–2nd, 1916, "warning" notices—repeated, in some cases, at intervals during the night according to the movements

of the raiders—were sent to twenty-eight districts and " action " notices to nineteen.

Two main advantages were offered by the scheme in its practical operation—(1) the adoption on the railways of precautionary measures based on a well-organised system, and (2) the communication by the railways of information concerning the movements of hostile aircraft which might be of the greatest value to those directly responsible for the measures of defence.

Under (1), it gave the railways the earliest practicable warning, so that they could make ready ; it restricted the taking of Air-Raid Action to just those districts in which danger had developed or might reasonably be expected to arise ; and it established a recognised authority through which alone the railway companies were to receive their instructions.

Under (2), the leading railway systems of Great Britain, having, in the aggregate, many thousands of stations linked up by railway telegraph or telephone wires with railway headquarters which, in turn, had direct communication with the Executive Committee's offices in London, were, through that Committee, able to supply General Headquarters, Home Forces, with information more speedily, and on a more comprehensive scale, than could have been secured by any other means within the range of practicability.

The combination of these two advantages ensured the prompt receipt in London of information both of the arrival of the enemy aircraft and of their movements here. It was not only that the railways along the coast and in every part of the country over which the Zeppelins (and, subsequently, the enemy aeroplanes) might pass were prepared for them when they came, but railway officials and railway men, alike in great centres and in remote villages, often rendered a most important service in helping to secure for the raiders the reception they deserved. " Times out of number " the Railway Executive were able to give to the military authorities their first information that a Zeppelin had passed a certain point or was making in a certain direction, those authorities being thus enabled instantly to advise their anti-aircraft batteries or their air squadrons at a time when the saving even of seconds might be of vital importance.

The Scheme in Practice.

How the system worked will be better understood if we take, by way of example, the course of procedure on the occasion of the raid of November 27th–28th, 1916, when a number of Zeppelins visited the Northern Counties and the Midlands and dropped about 100 bombs, occasioning, however, only few casualties and no damage of military importance.[1] They then returned—minus two of their number, which were brought down and sank in the sea.

[1] The *communiqué* issued by the Field-Marshal Commanding-in-Chief in respect to this raid was to the following effect :—

" The latest police reports show that the damage and casualties caused by last night's

At 6.40 p.m. on November 27th, the Railway Executive Committee had an intimation from Headquarters, Home Forces (otherwise "H.Q.H.F."), that a raid would probably occur that night. This anticipation was confirmed at about 8 p.m., from which time warnings for different districts were issued in rapid succession. At 9.1 p.m. there was received at the Executive Committee's offices in Westminster the first of a long series of railway messages giving news of the raiders. The whole of them were at once communicated to H.Q.H.F. This first message—from the North Eastern Railway, York—announced that the station-master at Burton Agnes reported having seen a Zeppelin out at sea at 9 p.m.—that is to say, only one minute before the receipt of the news in London. Six minutes later, Grimsby (Great Central Railway) advised the approach of hostile aircraft at 8.48 p.m., while at 9.26 p.m., Withernsea reported that hostile aircraft could be seen in a N.W. direction, dropping bombs. By this time a number of districts "warned" at the outset had received the "Take-Air-Raid-Action" order, which was now, also, passed on to a number of others, while districts adjoining them, or situate elsewhere, received the "warning." The interval which elapsed between the "warning" message and the "action" order varied considerably, according to the situation of the districts in relation to the movements of the raiders. In one instance it was only four minutes. In several it was about half an hour, and in others an hour or more. In one case, it was two hours and forty minutes, and in still another it was only ten minutes short of five hours.

By 10.25 p.m. most of the districts likely to be affected had at least been warned, if not ordered to "take action," and from that time the messages received in London related mainly to movements of the hostile aircraft, as reported by different railway companies. From these messages it was possible practically to follow the progress of the Zeppelins across country; to know, more or less, in which direction they were going; to anticipate from which point they would be heard of next; to gather how, occasionally, they "doubled back," and even to form an approximate idea, from the figures given, of the number of bombs they were dropping. Typical of many of these messages was the following, received from the Great Northern Railway at 11.43 p.m., and sent on at once to H.Q.H.F. :—"Doncaster reported at 11.40 p.m. having heard sixteen bombs dropped between 11.35 and 11.40 in N. direction, some distance away." This intelligence, it will be seen, came to hand in Westminster within three minutes of the sixteenth bomb having fallen in Yorkshire. The passing of the message on to Headquarters, Home Forces, would be a matter of only a few seconds.

At 11.50 p.m. there was an especially welcome message from the North Eastern, at York :—"Zeppelin brought down off Hartlepool in

air raid are very slight, although over 100 bombs are known to have been dropped. One woman died from shock, while five men, seven women and four children were injured.

"In one town fifteen houses were seriously and twenty slightly damaged. At the other places at which the bombs were dropped the damage was insignificant. No damage of military importance was caused."

flames, and dropped in the sea." [1] But others were left, and their movements, in the North and the Midlands, were followed up as persistently, and reported on as promptly, as before. In the latter respect the night's record deserved to be headed by a Midland Railway message which said :— "Zep. over Ballington, near Manchester, at 12.55. Now turning for Chester, at 12.57." This news must have been sent first to Derby, whence it would have to be transmitted to London by private wire ; yet its arrival in the Railway Executive offices was still recorded as— 12.57.

Meanwhile some fresh districts had been warned ; others had been told to "take action" ; many of those previously affected were authorised to "resume" normal conditions, and at about 3 a.m. a number got the "all clear" message. By this time, in fact, whilst some of the Zeppelins were still in the North or the Midlands, others were making for the East Coast, so that districts on the West Coast or in the Southern Counties were no longer likely to be visited and the precautionary measures ordered in their case need not be continued.

How this eventful night ended was thus recorded in the unemotional official "log" :—

Time.	Message from.	Nature of Message.
5.55 a.m.	G. E. R.	Acle report : Aircraft going towards Yarmouth at 5.41. H.Q.H.F. advised.
6.15 ,,	Mid. . .	Lynn reported at 5.55 : Zepp. passing. Going slow. Apparently only one engine working. Four aeroplanes pursuing. H.Q.H.F. advised.
6.22 ,,	G. E. R.	Yarmouth wires : Aircraft going seaward at 6.10. H.Q.H.F. advised.
6.28 ,,	,,	Yarmouth report : Zepp. now hovering over between here and Gorleston, at 6.25. H.Q.H.F. advised.
6.38 ,,	,,	Yarmouth South Town Report : Zepp. passed out to sea at 6.30 a.m. H.Q.H.F. advised.
7.0 ,,	,,	YARMOUTH SOUTH TOWN REPORT : ZEPP. BROUGHT DOWN IN FLAMES OFF THIS COAST AT 6.45 A.M. H.Q.H.F. advised. ALL CLEAR AT 7.0 a.m.

Work Involved.

It may be of interest to supplement these details by giving some idea as to the actual extent of the work involved on the part of the railway interests.

The number of railway companies' messages received by the Executive Committee's staff during the course of the raid in question—that is to say, messages giving news as to the movements of the raiders—was eighty-four. As these were practically all sent on by telephone to

[1] The Zeppelin in question, the L.34, Lieut.-Commander Max Dietrich, was shot down by a night-flying aeroplane at 11.45 p.m. It rapidly became a mass of flames, struck the sea about a mile from land, and sank in 40 fathoms of water.

H.Q.H.F., the total number of messages of this kind dealt with by the staff may be put at 168.

From H.Q.H.F. came sixty-six messages specifying from time to time the particular districts to which "warning," "action," "resume" or "all clear" intimations were successively to be addressed. Each of these sixty-six meant that telephonic instructions had to be sent by the staff to the headquarters of the companies in Category I on the complete list. The number of these particular companies in the areas affected ranged from one to six, and the number of H.Q.H.F. instructions telephoned to them by the Executive Committee's staff was, approximately, 200, increasing the total number of messages received or dispatched by them, whilst the raid was on, to 368.

Apart from the Post Office telephone expert on all-night duty at the switchboard (and an exceptionally capable man, even for an expert, he required to be), the Executive Committee's staff engaged on this work, through the duration of the raid, consisted of no more than three persons. They slept on the premises, and had telephones alongside their beds, so that they could be summoned at a moment's notice. On the wall of the telephone room used by them on such occasions was a large scale official railway map of England and Wales divided into the forty-three air-raid districts and having on one side four columns headed respectively "Warning," "Action," "Resume" and "All Clear." These four columns, painted in white on a black ground, were divided into squares, numbered downwards from eleven to fifty-four (exclusive of 20) in order that, by means of chalk marks, it could be seen at a glance which districts were affected by the raid. In front of the chief of the anti-air-raid staff on duty was a chart designed to show the time at which H.Q.H.F. messages, "Warning," "Action" and "Resume," were sent to those of the fourteen railway companies (comprised in Category I) that might be affected by the official messages to be transmitted to any of the districts specified in them. Reference to this chart (which allowed of the dispatch of messages being checked in the case of companies as well as of districts) was facilitated by the giving of a separate column to each company and the printing of a thick line in red ink across the squares corresponding to the numbers of the districts (printed down the side of the chart) in which the particular company was concerned. Thus the Midland had railway lines in twenty-four of the air-raid districts, the London and North Western in twenty-one and the Great Western in eighteen, while the lines of the Metropolitan Company were to be found in only two. No fewer than twelve out of the fourteen companies to be advised direct from the Railway Executive's offices were included in No. 48 area, comprising the London District, which, however, was not affected by the raid of November 27th–28th.[1] By means of this chart it was impossible to overlook the advising of a railway company affected.

[1] Such was the system adopted, and such was the skill they attained, that the staff claimed to be able to send (by private telephone) a "warning" or other H.Q.H.F. message to the termini of *twelve* London railway companies in fifty seconds!

Then each air-raid message coming from a railway company had to be at once entered on a separate sheet of paper showing time of arrival, source, nature of message, and time of transmission to (say) H.Q.H.F. Finally, as far as the Executive Committee's staff was concerned, a complete record of the night's work, accompanied by a sketch map showing the districts concerned, had to be drawn up; though this could be done when the workers had rested after their strenuous labours.

As regards the individual companies, one must remember that most of the eighty-four advices, concerning the movements of the Zeppelins, forwarded by them to the Executive Committee's offices on the occasion of the raid here specially dealt with had already been transmitted to their own headquarters from local stations; that each warning or order received direct from the Railway Executive would be re-transmitted over the whole of the sections of lines included in the district affected; that some of the warnings and orders might have to be passed on to the smaller companies in Category II for further distribution, and that allowance must be made, also, for the General Control messages through the Post Office telephone exchanges to railway companies in Category III for every station, goods yard and docks on their respective systems. Nor must one leave out of account such messages as H.Q.H.F. might dispatch to anti-aircraft batteries, or otherwise, as the result of advices received through the Railway Executive Committee.

It is practically impossible to estimate the sum total of all these messages on the occasion of an air raid of any duration; but the number thus directly due to effective railway organisation, apart from others which would be dispatched, must, considering the period of time covered, have been little short of prodigious.

At the headquarters of each of the leading railways air-raid messages were dealt with by the company's Military Staff, which was continuously on duty throughout the war. Each warning or order received at a London terminus from the Railway Executive would, if there should be any prospect of an attempted raid on the Metropolis, be re-transmitted by telephone to the various offices and departments in the station itself, to the company's other stations, depôts, etc., within the London area, and, also, in the case of a raid at night, to the chief officers of the company at their private residences in order that those officers could keep in touch with all that was happening and come at once to headquarters in case of need. When, on the raid being over, the Military Staff had finished, for that occasion, with all this telephoning, they would turn their attention to the compilation of a complete log of the events of the night for the information of the General Manager on his arrival in the morning.

Later on the messages mentioned above were changed to code words, namely, "Green" for "Warning," "Red" for "Take Action," "Yellow" for "Resume Normal Conditions," and "White" for "All Clear." Records of the messages received at or forwarded from the Railway Executive offices were thenceforward kept on sheets of paper

ruled off into Anti-raid-warning Districts and divided into columns, as indicated by the examples given, the time squares (here marked "G," "R," "Y" and "W") and the columns on the right being either coloured green, red or yellow, or left white for the entry thereon of the times in respect to the corresponding messages received from General Headquarters or forwarded to the railway companies having lines within the district stated.

District	Company and Time Order received from G.H.Q.	Green	Red	Yellow	White
45	G. | R. | Y. | W. G.W. .. .. Mid.				
46	G. | R. | Y. | W. G.W. .. .. L.S.W. .. .. Mid.				
47	G. | R. | Y. | W. G.W. .. .. L.S.W.				
48	G. | R. | Y. | W. G.C. .. .. G.E. .. .. G.N. .. .. G.W. .. .. L.B.S.C. .. .. L.N.W. .. .. L.S.W. .. .. Met. .. .. Met.D. .. .. Mid. .. .. Til. .. .. S.E. & C. ..				

Defeat of the Zeppelins.

The year 1916 which saw the initiation of the scheme just described was the year that saw, also, the defeat of the enemy airships.

Between January 31st and September 25th there were twenty raids on this country by Zeppelins, and seven of these were made during April, whereas in the last three months of the year the number was only two. Several of the raids were remarkable for the wide area over which they extended. On the night of September 2nd–3rd, when there was a raid by a force of thirteen Zeppelins, visits were paid to East Riding, Lincolnshire, Nottinghamshire, Norfolk, Suffolk, Cambridgeshire, Huntingdonshire, Essex, Hertfordshire, Bedfordshire, Kent and London. On the night of October 1st–2nd, the Zeppelins wandered about to such an extent that the "Take-Air-Raid-Action" order was sent to no fewer than twenty-two districts, while nine others received the "warning" notice, making a total of thirty-one affected out of the forty-three.

Concurrently, however, with the development of the schemes which specially concerned the railways, there had been a great increase in the efficiency of our anti-aircraft defences in other directions, as well.

When, in February, 1916, the War Office assumed general control and direction, the arrangements for the defence of London were still admittedly inadequate. Such defence was then entrusted, in part, to the No. 19 Training Squadron as a supplement to their ordinary training duties. In May the first Home Defence Squadron was formed, and before the year closed a number of other similar squadrons had been organised and distributed throughout the country. A night-training squadron had also been created. Then there were made available large supplies of aeroplanes possessed of greater speed and increased altitude capacity, an abundance of powerful searchlights and anti-aircraft guns of a greatly-improved type.

The combined effect of the different measures thus adopted began to tell upon the enemy airship raiders in the autumn of 1916, with the result that a season which they had begun with much eagerness and activity ended for them in a succession of disasters. In the raid of September 2nd–3rd, an enemy airship was brought down in flames at Cuffley, on the Northern outskirts of London, by Lieut. William Leefe Robinson, R.F.C., who, at a height of 12,000 feet, established a record by being the first to destroy an airship by fire from an aeroplane machine-gun, with the use, also, of the ordinary "tracer" bullet, capable of being fired from a rifled gun. Two more Zeppelins were brought down in Essex, one of them in flames, in the raid of September 23-24th; another—shown up by our searchlights, subjected first to heavy fire from our guns and then to direct attack by one of our airmen, Lieut. Tempest, with his machine-guns, at a height of 10,000 feet—caught fire and fell to the ground at Potters Bar, in the North of London, on the night of October 1st–2nd, and there were the two mentioned above as accounted for in the raid of November 27th–28th, on which occasion the enemy, in their official report, admitted the existence of "extraordinarily powerful defences." [1]

[1] See "The Struggle in the Air: 1914–1918," by Major Charles C. Turner, late R.A.F. (Edward Arnold: 1919).

The result of these experiences may well have been to suggest to the German authorities—as was affirmed in February, 1917, by an American newspaper correspondent who had then recently been in Germany—that "Zeppelin raids on England were bad business"; and this view must have been confirmed by the further experience gained on the night of June 16th–17th, in the same year, when still another Zeppelin, attacked by two machines, was brought down in flames.

Zeppelin raids had, in effect, and as the result of the powerful defensive organisation created, proved a failure from the point of view of the enemy; and, although he was not then disposed to abandon them entirely, his airship raids were, from the end of 1916, few and far between.

Defeat in one direction may, nevertheless, have been regarded as leaving possibilities of success in another, since the enemy appears to have devoted his aircraft energies in the winter of 1916–17 mainly to preparations for an important change in tactics. Before, however, dealing with this, there were one or two developments in British policy which should be briefly indicated.

The Blinds Order Cancelled.

Much trouble continued to be experienced on the railways in the enforcement of the order made under the Defence of the Realm Regulations that passengers in railway carriages provided with blinds were to keep them lowered so as to cover the windows. There were windows (including those of lavatories, guards' vans and corridor coaches) which had no blinds. If passengers lowered the blinds when they entered the carriages they did not always keep them lowered when they left. If an already well-filled train had all its blinds down, other intending passengers had to walk along it and open the carriage doors in succession in order to find vacant seats, inconvenience and delay being caused in consequence. Further delay would have resulted if at suburban or other wayside stations the limited staff available had attempted to lower every blind in the compartments then empty. Most striking of all was the fact that, whenever a raid was actually on, railway passengers experienced so little of the "terror and boundless panic" which, according to the German newspapers,[1] filled the souls of the British public on these occasions, that they actually raised the blinds in order to look at the Zeppelins through the carriage windows!

With a view to overcoming these various difficulties, the Railway Executive suggested to the railway companies in October, 1916, that whenever, on the occasion of a raid by hostile aircraft, a passenger train

[1] The Berlin *Lokalanzeiger* said on this subject:—"When, in the blue sky of the summer, we behold a small white cloud sailing near the sun, our breathing is suspended by the joy which fills our whole being because we know that a Zeppelin is passing on its way to scatter a frightful death, or immeasurable destruction, among our enemies on the other side of the Channel. A smile of infinite happiness hovers on our lips at the thought of the terror and boundless panic the arrival of this most glorious product of Germany's skill and science will create among that godless population of the monstrous Babylon on the Thames."

entered an area or district in which "Air Raid Action" had been ordered, it should be stopped and have all lights in the train extinguished, being then allowed to resume its journey at a reduced speed.

This new method of procedure was found to meet all reasonable requirements, and, as the eventual result of representations made to the Home Office and to General Headquarters, Home Forces, by the Executive Committee, the Home Secretary withdrew the "Blinds Order" in March, 1917, a notice to the following effect being then substituted for it in the railway carriages:—

> The Order that "Passengers in railway carriages which are provided with blinds must keep the blinds lowered so as to cover the windows" is cancelled.
>
> The lights in the carriages will be extinguished in case of a threatened attack by hostile aircraft, and thereafter no lights may be exhibited by passengers.[1]

Standard Regulations.

While the organisation thus eventually evolved may appear to have become, by this time, approximately complete, the military authorities nevertheless found a certain lack of uniformity in the arrangements made by the various railway companies for carrying the scheme into effect.

Such uniformity was, in the circumstances of the situation, especially desirable, and the Railway Executive accordingly appointed a Sub-Committee of Superintendents to draw up, for issue to all the companies, a set of standard regulations in connection with the working of the scheme. This was done, and the regulations, alike in pamphlet and in poster form, were distributed among the companies early in May, 1917. They were to be "strictly observed," and they certainly supplied the one thing needed to perfect the co-operation of the British railways in the defence of the country against raids by hostile aircraft.

Daylight Raids by Aeroplanes.

The dropping of bombs on London by an aeroplane in broad daylight on November 28th, 1916, the first occasion on which this had been done, was probably an experiment designed to show the enemy how far a new departure in this direction would be practicable. His design was to construct a fleet of "giant" aeroplanes, of a larger and much more powerful type than before, and send them over in successive squadrons to make daylight raids upon us under such conditions that they would, as he imagined, enable him to hold England at his mercy. In any case there was the prospect that attacks by day would be more dangerous to us than attacks by night.

[1] In February, 1918, the "lowering of blinds" Order was renewed in the case of trains running on sections of railway visible from the sea or from the navigable waterways of any estuary, the reason for such renewal being, in this instance, that the lights in railway carriages on these sections of line might be of assistance to enemy sea-craft.

The "Gothas" began their programme of daylight raids with one on Folkestone on May 19th, 1917, when a heavy loss of life occurred; and from that time they came in such numbers, kept at so great a height, and flew at such a speed (as compared with the Zeppelins), that some new departure had to be made in the system of defence in order to meet the new conditions. Thus in place of the separate districts and four distinct messages—"Warning," "Take Action," "Resume" and "All Clear"—which still remained in force for night raids, a large portion of the East, South-East, and South of England (including London) became a single "Day-warning District" in the case of daylight raids. The messages were reduced from four to two, namely, the Field-Marshal's order, "Take Air-raid Action," and the Field-Marshal's notice, "All Clear," and these were sent to all the recognised authorities, establishments, institutions, etc., on the "warning" lists. Among the authorities so notified was, of course, the Railway Executive, and the messages were distributed by that body, as before, among the railway companies operating within the widened district in question; though an intimation was given, when the new arrangements were decided on, that these day-time warnings would be sent to them only in order that they could ensure the protection of their staffs and take the necessary measures in the event of the permanent-way being injured or fires caused.

Between May 19th, 1917, and August 22nd, 1917, inclusive, the enemy made eight aeroplane raids on Kent, Essex, Suffolk, and, also, on London—when he could get as far as the Metropolis. The casualties he caused during this period amounted to 401 killed and 978 injured. But although the Gothas may have been a great advance over the enemy's earlier aeroplanes and seaplanes, he had failed to allow for the possibility of England acquiring a new type of aeroplane which, as a fighting machine, would be superior even to his Gothas. In describing these new British machines, Lord Cowdray, President of the Air Board, said at the opening of the Official Air Services Exhibition on October 31st, 1917:—

> The machines they were now producing could rise to a height at which breathing was difficult for most people, impossible for some, and at which relief could be obtained only by the use of oxygen. They had a greater speed than double that of the quickest express train.

These machines, Lord Cowdray further said, were then being manufactured at a great and ever-increasing rate by hundreds of thousands of workers; and the eventual result of their use—combined with a further considerable increase in the personnel of our anti-aircraft defensive forces, together with a more effective organisation thereof—was that nine-tenths of the German aircraft which came here failed to reach London.

Such, in fact, was the superiority of the new British machines over the Gothas, and so quickly could our airmen surround and attack the German Goliaths, that from August, 1917, the enemy, as the result of

his steadily-increasing losses, abandoned the daylight raids from which he had hoped so much and substituted for them raids at night—and especially raids by moonlight.

Thirty Enemy Aeroplanes.

During the month of September, 1917, the enemy made eight raids by night on Kent, Essex and London. More followed in October, and there were two in December. The raid of October 31st–November 1st was remarkable for the fact that it was made by no fewer than thirty aeroplanes which came over in seven groups seeking to reach London viâ the Essex Coast, the Thames estuary, or the Kent Coast. Owing to the vigour of our defensive gunfire and to the counter-attacks of our own aircraft, only about three of the thirty machines succeeded in penetrating to the heart of London. They dropped some bombs there, and the casualties amounted to fourteen killed and eighty-seven injured; but the enemy can hardly have regarded these results as worth so determined an effort.

Again the railways took an active part in carrying out the defensive tactics. The area affected was comparatively small, "warning" notices being sent to only seven, and "action" orders to only five, districts; but the number of messages from railway sources received at the offices of the Railway Executive (all giving news as to the movements of the raiders) between 10.56 p.m., when the first of the series came from Walmer (South Eastern and Chatham Railway), and 2.56 a.m., when the final "All Clear" message was sent out, was no fewer than ninety-eight. Thirty-three of these came between 1 a.m. and 1.59 a.m. All, of course, were telephoned at once to Headquarters, Home Forces.

Zeppelins Again.

Disappointment with the results attained by his much-vaunted Gothas, whether by day or by night, was probably the reason for the enemy's decision to make still another effort—this time on a big scale—with his previously-discredited Zeppelins. This he did on the night of October 19th–20th, 1917, when England was raided by what became known as "The German Armada."

According to statements made in Parliament, the number of Zeppelins concerned in the raid was "ten or more." In order to avoid our anti-aircraft forces they travelled at a great height, and they were there buffeted about in the upper currents of the atmosphere by heavy winds. They experienced further difficulties on account both of fog and of intense cold at the elevation to which they rose. The raiders dropped many bombs, with, however, comparatively minor results, while of the five which approached London four failed to penetrate the defences of the

Metropolis and did no damage. The fifth drifted over London with its engine shut off and dropped three bombs.

By order, it is said, of the commander of the squadron, the motors were at last stopped and the raiders ran with the wind until they could discover their position. When the navigating officers succeeded in doing this, they found themselves over France. By this time, however, the daylight had come and the squadron no longer had the protection of the fog. So the French airmen and gunners were able to make the best use of their opportunity. One of the Zeppelins was brought down in flames by gunfire; a second, attacked by airmen, was captured intact with its crew; two were forced to land but were destroyed by their crews, and one was seen to drop into the Mediterranean, though no trace of it could afterwards be found.

The part played by the anti-aircraft organisation of the British railways on this memorable occasion—when, according to some of the critics, the raiders took the country "unawares" and wandered about over England practically undetected until they dropped their bombs—may be thought worth relating.

The first intimation of a probable raid reached the Railway Executive Committee from Headquarters, Home Forces, at 5.43 p.m., and the advice so given added that the most westerly of the Zeppelins then on their way to this country was eighty miles east of Flamborough Head at 5.30 p.m.—that is to say, only thirteen minutes before the news was received. The circulation by the Executive Committee's staff of warning and other messages from Headquarters, Home Forces, for the different railways began at 6.24 p.m., and such were the wanderings of the Zeppelins in their conflict alike with the elements and with the anti-aircraft forces that either "warning" or "action" notices were sent to no fewer than thirty out of the forty-three districts. The "warning" notices were, in fact, extended across the country to District No. 36, which included Barmouth and Aberystwyth (though the raiders did not actually reach No. 36), while the "action" orders were sent as far west as the adjoining district, No. 34, in which Birmingham, Wolverhampton and Shrewsbury are situated. They further covered most of the districts between Yorkshire and Hants, Surrey and Kent.

The first message received at the Executive Committee's offices from a railway source in reference to the movements of the Zeppelins on their arrival came from the Great Eastern Company at 7.2 p.m. It said, "Walsingham report; aircraft travelling south at 6.50." From this time until the final "All Clear" message was sent out, early next morning, the number of messages received from railway sources giving information as to the movements of the Zeppelins, and sent on instantly by telephone to Headquarters, Home Forces, was no fewer than eighty-three.

The following examples may serve to show how the railways kept in touch with the raiders :—

Time.	From.	Nature of Message.
p.m.		
7.40	G.N. . .	Burgh (near Skegness) at 7.37 report one Zepp. E. to W.
7.50	G.E. . .	Thurston : Aircraft heard going south, 7.45.
8.21	L. & Y. .	Featherstone report : Can hear bombs exploding in direction of York.
8.30	G.E. . .	Wisbech say plane passed wide of station at 8 p.m., going west.
8.31	G.E. . .	Thetford. Airship now over here, dropping bombs. Timed 8.20.
8.36	G.E. . .	Hardingham report, 8.34 : Bombs dropped in vicinity and Zep. apparently heading for Norwich.
8.43	G.E. . .	Thetford now report Zep. gone south.
8.47	Mid. . .	Thorpe report number of machines going S.E. Heard no bombs dropped.
9.15	G.N. . .	Luton Hoo. Aircraft, 9.53, towards London. No bombs.
9.24	S.E. & C. .	Canterbury report bombs dropped either side of 7.45 p.m. Ashford to Dover train between Grove Ferry and Minster. No damage to railway or train.
9.30	N.E. . .	Withernsea report bombs dropped at 9.28.
10.8	L. & N.W.	Three bombs dropped on line at Northampton. Not much damage.
10.10	G.E. . .	Romford report aircraft travelling towards North London at 10.6.
11.2	S.E. & C. .	Ashford can hear aircraft coming from London going towards Folkestone. Bombs dropped Charing.
11.19	G.W. . .	Birmingham report, 11.10, aircraft over Halesowen, Langley Green, Rowley Regis and Danzey. Bombs dropping at two latter places.
11.41	S.E. & C. .	Folkestone, 11.25. Aircraft overhead, proceeding eastward. Guns firing. No bombs dropped.
a.m.		
12.38	Mid. . .	Report bombs dropped between Bedford and Ampthill. Broke telephonic communication with London.
1.37	L. & N.W.	Northampton report six bombs dropped on line. No apparent damage to line.
1.55	S.E. & C. .	Walmer report sound of aircraft passing towards sea at 1.40.
		ALL CLEAR—1.51 a.m.

Introduction of "Aprons."

Towards the end of 1917 there was a material strengthening of the defences of London by a resort to what were known as "aprons." An "apron" consisted of a large number of wires hanging vertically from a horizontal cable which, about 1,000 yards in length, was held in position

in the air at a considerable height by three captive balloons. The purpose of this contrivance was, not so much to bring down enemy Zeppelins or aeroplanes that might fly against wires themselves practically invisible —although the balloons, of course, could be plainly seen—as to compel the raiders, when approaching London, to keep at an altitude of from 9,000 to 10,000 feet in order to avoid the danger which the wires presented, the more so as they would not know how deep down the wires came towards the ground. As the result of these conditions the raiders had less chance of taking aim at specific objects, and were able to drop their bombs only more or less promiscuously, while they could themselves be more readily attacked by our own airmen owing to the limitation of the area within which they were able to fly. There was reason to believe that, in combination with the formidable barrage round London and the other measures adopted, these "aprons" had an extremely discouraging effect on the raiders, coming, as they did, as a sort of climax to the many other difficulties and dangers which now had to be encountered.

Final Visits.

After his Zeppelin raid of October 19th–20th, 1917, the enemy made no further attempt in this direction until the night of March 12th, 1918, when three Zeppelins raided the Yorkshire Coast and Hull. On the following night two Zeppelins passed over the North-East Coast and bombed Hartlepool, and on April 12th there was a Zeppelin raid on the Northern and Eastern Counties and the Midlands. On the latter occasion the "warning" notices extended as far west as Aberystwyth and Carnarvon and the "take action" order to Wrexham. There was no record of the raiders having reached those points, although they were active in the Manchester and Birmingham districts.

This was the last of the actual raids on England by airship, but there was an attempted raid on August 5th, 1918, when five Zeppelins appeared off the East Coast only to be chased and driven away by British aircraft, with still another loss to be added to the enemy's list of casualties, one of the five being shot down and falling in flames into the sea.

By this time, at least, the Germans must indeed have realised that Zeppelin raids on England were "bad business" for themselves, while their losses in still more airships in other directions had further led to the Zeppelin becoming thoroughly discredited as a fighting machine.

Meanwhile a number of raids by aeroplane, some of which caused heavy casualties, occurred during the first three months of 1918, giving occasion for the maintenance of the railway companies' organisation in full force, subject only to a few minor changes. From January 1st, for instance, the day-warning system in what was then still known as the "day-warning district" was abolished, the separate arrangements for day and night respectively applying thenceforward to all railways and the whole of the country. Another change made was in the reversal

of the messages "Resume Normal Conditions" and "All Clear," the latter now coming before the former.

The enemy's last attempt on London was made by thirty aeroplanes on Whit-Sunday, March 19th, 1918, when forty-three civilians were killed and one hundred and fifty were injured; though these results were only attained by the enemy with the loss of no fewer than seven of his own machines. The raiders paid a farewell visit to Kent on June 17th, 1918, and from that time nothing further—apart from the futile attempt in August—was seen of them in England.

Why the Raiders Came no More.

Having regard to the nature and extent of all those defensive measures in the evolution of which the British railway companies had taken so important a share, one may well assume that the enemy came at last to regard aircraft raids on this country as involving a greater degree of risk to himself than could be justified by the negative military value of the results he had attained.

There were, however, other circumstances by which he must no less have been influenced; and it may be of interest if, as a matter of history, and by way of completing the story it has here been sought to tell, these other circumstances are briefly indicated.

While the enemy had (with certain exceptions which will be dealt with later) been content, when making his raids on England, with wanton destruction of property and the indiscriminate killing and wounding of civilians, there was formed in connection with the British Flying Corps, in October, 1917, an 8th Brigade which was to carry aircraft warfare of a legitimate kind into the enemy's own country. Operating from Nancy, this brigade made systematic raids on chemical and iron factories in the interior of Germany from which the enemy was obtaining much of his war material. Instead, also, of flying at a great height, groping their way through the darkness, and dropping their bombs without regard to where they might fall, as the German raiders had done here, our own airmen passed through the enemy's barrages in broad daylight, and, on nearing their objective, came down so low as to be sure of hitting the target—which, as shown by the photographs taken, they generally succeeded in doing.

Results of great military importance and of a kind that powerfully impressed the German people were obtained; but these results were limited in extent inasmuch as the brigade engaged on this particular work consisted of no more than three squadrons. Here, however, the situation was to be changed by certain developments brought about in another direction.

The creation in February, 1917, of an Air Board which was to deal with questions relating to design, supplies, accessories, and the allocation of aircraft as between the Admiralty and the War Office respectively still left to each of those bodies the separate administration of its own air

service. Many disadvantages resulted from this arrangement, and in January, 1918, when a Secretary of State for Air was appointed, the Air Board was reconstituted as an Air Ministry which was to take over the administration of both the naval and the military air services. These were amalgamated on April 1st, 1918, to form the Royal Air Force. "Every effort," as told in a Parliamentary Paper on "Synopsis of British Air Effort during the War" [Cmd. 100], issued in April, 1919, "was made to build up and maintain in the Field a powerful series of systematic raids on the key munition and chemical industries of Germany"; the Independent Force, Royal Air Force, was constituted, and the three squadrons of the original 8th Brigade, R.F.C., were gradually increased to ten. Many raids were carried out on German territory in the direction stated. There was brought about, also, a great expansion in the air activities of the Allies on the Western Front, and if the enemy raiders came to England no more after June, 1918, the reason was that, by this time, Germany required to make use, in her own defence, of every machine she was able to control.

Number of Air-Raids on Great Britain.

The following table, compiled from the official return of airship and aeroplane raids on Great Britain, shows the number in each category for each of the years over which the actual raids (exclusive of unsuccessful attempts) extended :—

Year.	Character of Raids.		Total.
	Airship.	Aeroplane.	
1914	—	2	2
1915	20	4	24
1916	22	16	38
1917	6	27	33
1918	3	8	11
Total . . .	51	57	108

The Tubes as Shelters.

On July 14th, 1917, the Commissioner of the Metropolitan Police announced through the Press that, in the event of his receiving intelligence that enemy aircraft were flying towards London, police—regular and

specials—would be sent out from all police stations exhibiting a placard printed as follows :—

Various places where the said cover could be taken were afterwards suggested, among them being police stations, picture galleries, museums and public libraries. On July 20th the City Council was informed that arrangements had been made for the crypt of the Guildhall and the basement of the Old Bailey to be used as shelters when air-raids were on, and it was further announced on the same occasion that the Tube Railway Companies had consented to allow their platforms and stations to be made use of by the public for the purpose in question.

While those among the population of London who acted on the warning of the Metropolitan Police Commissioner did not despise the crypt of the Guildhall or the basement of the Old Bailey, it was the "Tubes" which took the public fancy. They were regarded as "the very thing." Located at such a depth underground, their stations might well be regarded as the safest spots in London, and full advantage was soon to be taken of the offer made by the combination of Underground and Tube Companies concerned.

A dozen enemy raiders paid a visit to the Kentish Coast on August 22nd, 1917, and when news thereof reached London—to be quickly spread throughout the Metropolis—thousands of people, women, children and men of all ages, without waiting for any official intimation and warning, flocked to the tubes and remained there until an "All Clear" message was circulated. The greatest rush, however, came in September of the same year, when the raiders had an almost continuous London season, evidently anticipating that the best way of terrorising the English people would be to make a succession of raids, night after night, or at very short intervals, giving Londoners no rest for the time being.

The Commissioner of Metropolitan Police issued on September 22nd a further announcement to the public, saying, among other things :—

> The tube and other railway stations, which provide secure shelter, will admit the public without charge as long as the stations are open for traffic and, if already sheltered there, till the raid is over, and police arrangements have been made as far as practicable for the regulation of the persons congregating there.

On the night of the 24th there was a raid on London in which fifteen persons were killed and seventy injured, and the rush to the tubes was so great that the number of people who sought refuge in them was

estimated at 100,000. There was another raid the following night, and the number who then "took cover" in the tubes was estimated by the railway officials at 120,000. On September 26th, and again on September 27th, people began to flock into the tubes as early in the evening as half-past five, without waiting for any warning. On neither of these two nights, in fact, was there a raid at all.

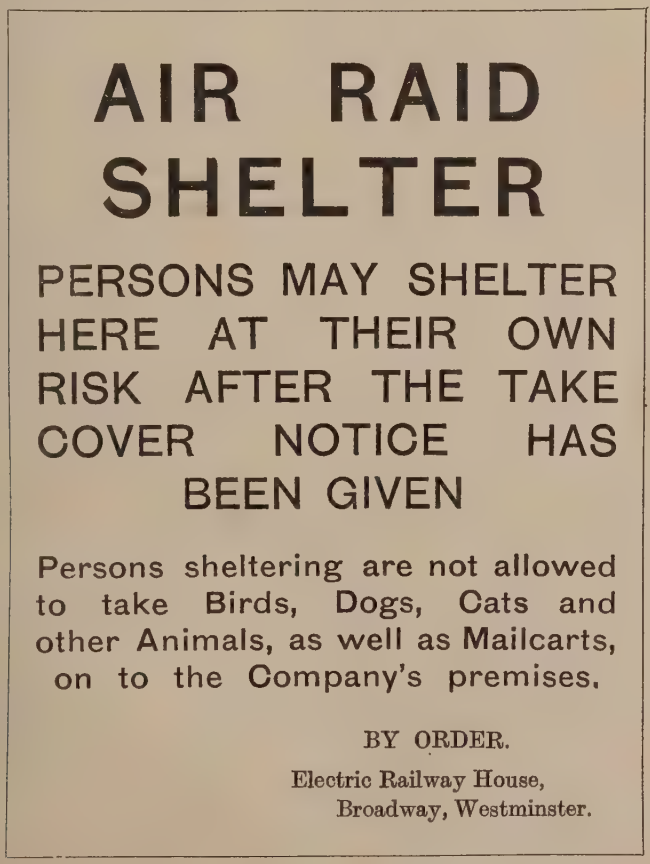
By this time it had become clear that the use of the tube stations as shelters would have to be revised. The original intention had been that they should be available as a shelter for people who were in the streets when the "Take Cover" notice was circulated and for whom those stations might afford the only available cover which, at the moment, it would be possible for them to take. What happened in practice was that, on the very rumour of a raid being expected—and even as the result of what had become a matter of almost nightly routine—thousands of people, mostly belonging to the poorer type of aliens in the East End or in the North-East of London, left their homes and went to the tubes, where they proceeded to camp out until such time as the danger, real, prospective or imaginary, was over. They not only went there in entire families, diminutive girls or boys carrying the latest baby, but they took with them supplies of provisions, pillows and bedding, on mail carts or otherwise, together with their cat or their dog, their parrot or the pet canary. They established themselves on the stairs, along the passages, or on the platforms; though in the latter case they aimed at keeping as near to the exits as possible—resisting all attempts on the part of the railway officials to distribute them better—their aim being to make sure that they would be among the first to leave again when the "All Clear" message came. Should that message be long in coming, they had still made all possible provision for spending the night in the tubes with such degree of comfort as they could expect.

So congested, under these conditions, did the stations become, that the safe working of the lines was imperilled. It was, also, with the greatest difficulty and inconvenience that the ordinary passengers were able to get to and from the trains. Nor, even when they did succeed in reaching their train, were they necessarily free of the refugees. Many juveniles or mothers of families belonging to the East End—and having, in the case of the latter, their families with them—hit upon the expedient of entering a train and, instead of a monotonous wait on the station platform or on the station stairs, travelling to and fro between the extreme points of the journey (partaking *en route* of the refreshments they had brought), until such time as, the raid being over, they could leave the train where they had entered it, and so make their way back to their homes. On the Metropolitan and the Metropolitan District lines, the inner circle trains were much appreciated.

A large staff of special constables had to be employed on the tubes and underground railways to look after the shelterers and preserve order as far as possible; but the task thus undertaken was a distinctly onerous one owing to a tendency among the lowest type of the aliens,

who sometimes constituted about 75 per cent. of the total number, to become unruly mobs. When, also, the last of the sheltered had departed, there was still much for the railway staff to do, not only in clearing up the litter the people had left behind them, but in cleaning down and disinfecting each and every station concerned in order that any risk of danger to the health of the next day's passengers might be avoided.

So, on September 28th, 1917, it was announced that, while the Underground Electric Railways Company did not propose to close the tubes as shelters for the public when an official warning had been given that an air-raid was impending, from and after that date the public—apart from ordinary passengers—would not be admitted until such warnings had been given. Restrictions were also imposed on the impedimenta the shelterers might take with them.


AIR RAID SHELTER
PERSONS MAY SHELTER HERE AT THEIR OWN RISK AFTER THE TAKE COVER NOTICE HAS BEEN GIVEN
Persons sheltering are not allowed to take Birds, Dogs, Cats and other Animals, as well as Mailcarts, on to the Company's premises.
BY ORDER.
Electric Railway House,
Broadway, Westminster.

Public Notice displayed at Entrances to Tube Stations in London.

This procedure assured the continued use, while avoiding the abuse,

of the tubes as a means of shelter. People could no longer flock into them at any hour of the day and remain as long as they pleased, whether there was any real occasion for their doing so or not, but they were still free to " take cover " in them when the necessity did arise. That there was no curtailment of the protection afforded under these conditions was clearly shown by the temporary housing, during the raid of February 18th, 1918, of 300,000 persons in the tubes, this figure establishing a record.

Altogether there were over thirty occasions on which the tubes and the underground lines in London were resorted to by the public as places of shelter, and the total number of persons so making use of them during the course of the war was, approximately, four and a quarter millions.

Damage to Railway Property.

One class of property that seemed to be specially marked out for destruction by the raiders was that which was represented by the railway systems of the country. The view taken in regard thereto was, apparently, that if vital points on the Lines of Communication in England could be smashed up, or even rendered inoperative for a time, the flow of men or material to the various Fronts might be checked and a direct military gain secured by the enemy in addition to all that he expected from the moral and material results due to the damage, destruction or loss of life he caused. For these reasons—judging from what actually occurred—railway stations and railway lines, goods depôts and shunting yards, viaducts and other important railway structures, were among the chief objectives of the raiders whenever, instead of being content to drop their bombs indiscriminately in the hope and expectation that damage of some sort or kind would be sure to follow, they aimed at particular targets.

A great deal of property owned by the railway companies in London and elsewhere suffered, no doubt, even when there was no reason for supposing that it had been specially aimed at and successfully struck. In the twenty-five raids on London by Zeppelins or Gothas between May 31st, 1915, and May 19th, 1918, inclusive, the number of " sets of premises " recorded by the London Fire Brigade as having been damaged were, on various occasions, 105, 219, 336, 495, 673, 965, 1,755 and (on May 19th, 1918, the last of the series) 3,010. Under the conditions suggested by these figures, it was inevitable that property owned by railway companies on so extensive a scale within the London area should be affected by the raids, whether the enemy had special designs against it or not. There are districts in London where, no doubt, railway-owned property took the chance—and may, also, have shared the fate—of other property.

The fact may be further admitted that the opportunities open to the raiders were not the same throughout the air-raid period. In, approximately, the first half thereof, when our home defences were lacking in strength (owing, in part, to the sending of so large a number

How the Great Eastern Railway Company Recorded the Raiders' Movements over the Eastern Counties.

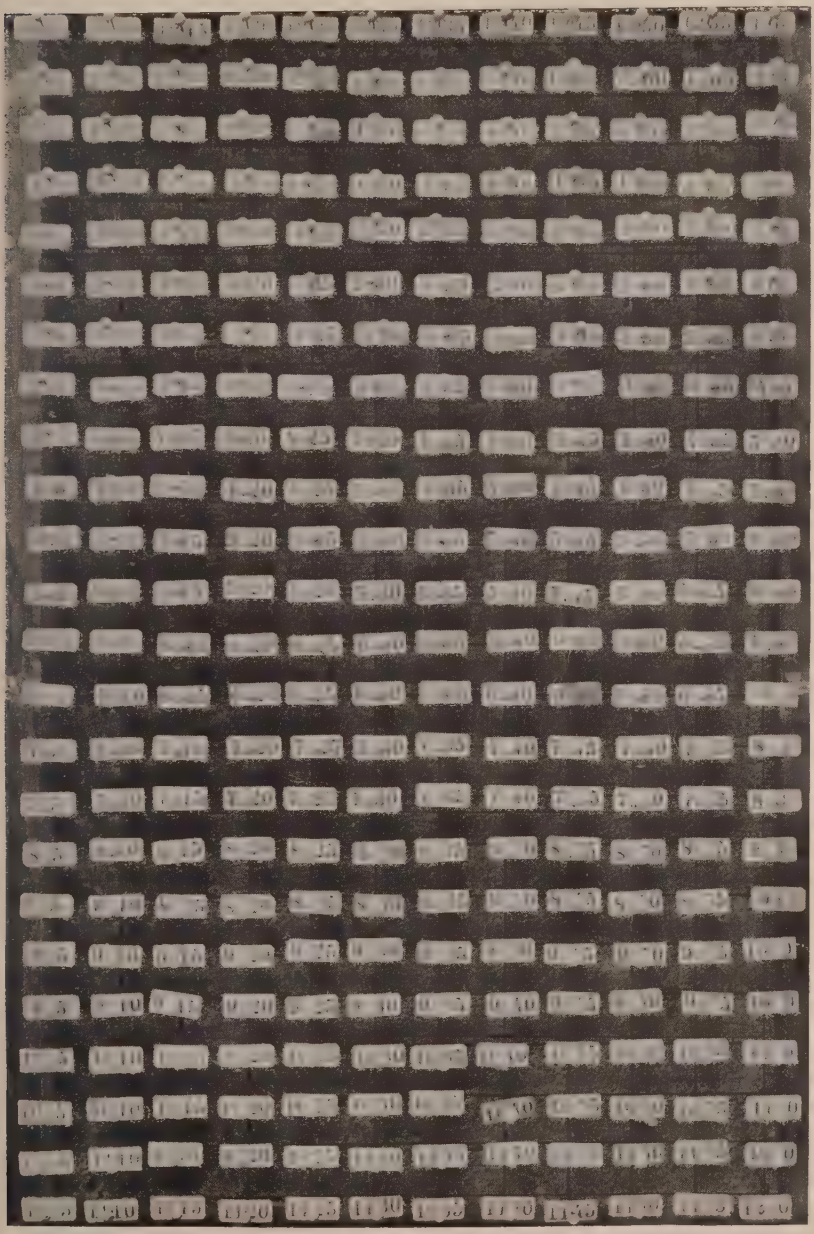


Fig. 1.

White-headed Time-interval Pins Mounted on a Cork-covered Board.

To face p. 420.

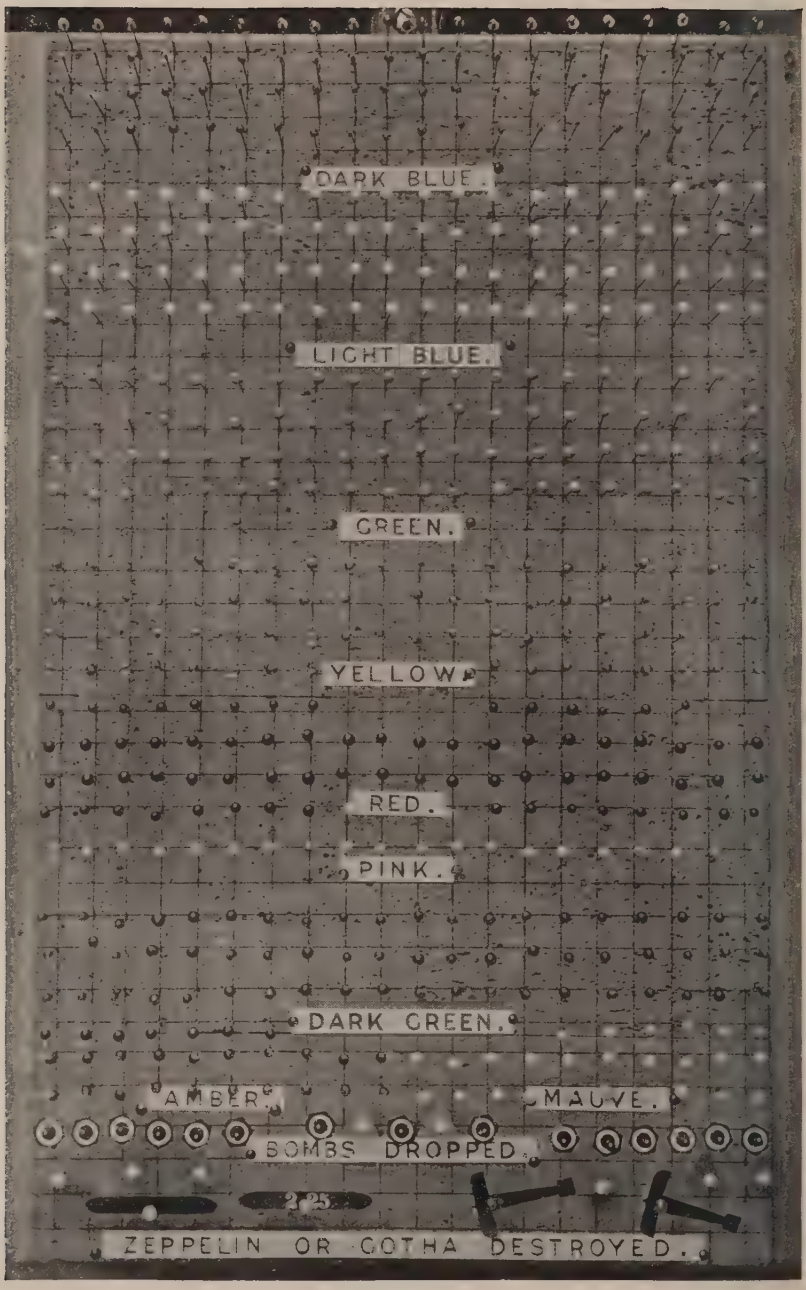


FIG. 2.

PINS WITH HEADS OF DIFFERENT COLOURS, USED TO INDICATE MOVEMENTS OF INDIVIDUAL RAIDERS. ALSO PINS WITH SYMBOLS.

[*To face p.* 421.

of British machines overseas), there may have been time to take a much more deliberate aim for the bombs dropped than was possible later on when our defences were so active that those of the raiders who managed to pass them were glad to unload their cargo and make their way back as fast as they could go.

All the same, evidence of deliberate intention on various occasions to wreck the railways is based, not only on reasonable presumption (having regard to the advantage to be gained therefrom by the enemy), and not only on the number of times the railway targets were struck, but, also, on the number of bombs that often fell in the immediate neighbourhood when the said targets were missed.

In any case, the material consideration which, from the point of view of national interests and the prosecution of the war, arose in regard to air-raid damage to railways was not (as in the case of other property) the extent of the financial loss involved,[1] but whether the results attained by the raiders did, so far as they affected the running track or other essential transportation facilities, cause any serious interruption of traffic ; and, more especially, whether those results did or did not have any real strategical significance in preventing or hampering the movement of troops or of war supplies.

These matters, among others, it is proposed to deal with in the following records of the experiences of various railway companies which, on account of their geographical position, length of line, or for other reasons, were either specially concerned in the raids or may be regarded as typifying the actual results as regards the railways in general.

The Great Eastern Railway and the Air-Raids.

On the Great Eastern Railway the taking of precautions against air-raids began almost concurrently with the outbreak of the war and several months before the raiders dropped their first bomb on British soil.

The one assumption that attacks from the air would inevitably be made on London was coupled with another, namely, that the enemy would aim at getting to London by way of the Eastern Counties as the

[1] On the question of financial loss due to damage done to railway property as the result of enemy air-raids, it might be pointed out that provision in respect thereto was made as follows in No. IV of the " Supplementary Clauses " to the agreement between the controlled companies and the Government :—

" (1) The Government to bear the cost of making good any damage to property or plant (other than property the rent of which would normally be included in the lower half of Account No. 8 of the Statutory Form of Railway Accounts) caused by bombardment or hostile aircraft (including any damage which may be caused through measures taken against such bombardment or hostile aircraft), whether such damage has been or can be made good during the period of Government control or not.

" (2) Any premiums paid in respect of any such property or plant already insured against such risks to be included in the companies' ordinary working expenditure, and credit to be given to the Government for any sums received by the companies under policies of insurance.

" (3) In the case of premises held by a company on lease or agreement, and which if owned by the company would fall within clause (1) the Government to indemnify the company to the extent of their legal liability under the terms of the lease or agreement in each case."

shortest route from Germany. In that case he would not only first be seen in the Eastern Counties, but would probably drop bombs there when passing over them either in coming or returning. Alternatively he might think it worth while to cross the North Sea to do what destruction he could in those counties even when he did not propose to get further inland, or should be prevented from doing so. There was the anticipation, also, that if, following up an air-raid or otherwise, the enemy should seek to effect a landing on our shores, he would inevitably do so somewhere between the Wash and the Thames.

So the Great Eastern was more likely to be concerned in what might happen in these directions than any of the other British railways, and no time was lost by the company in making such preparations for possibilities as prudence and foresight might suggest. There was the greater reason for the adoption of this course because of the view taken by the Railway Executive Committee in September, 1914, that, although enemy air-raids were to be anticipated, it would suffice if the companies they might specially affect took such precautionary measures as they themselves deemed expedient. No conception was then entertained of raids in which almost the entire country would be concerned.

The said prudence and foresight were, also, abundantly justified by what actually happened. From the time of the first Zeppelin raid, which was made on Norfolk, January 19th–20th, 1915, the Great Eastern Railway was concerned in most of the visits by airships, and when, from the end of 1916, the Zeppelins which had mainly crossed by the Eastern or the Northern Counties were succeeded by aeroplanes which favoured the Thames estuary and the Kent routes to London, the Great Eastern was still affected so far as regarded its lines in Essex and the East of London.

Most important of all among the defensive measures adopted by the Great Eastern was the one which assured that the company should receive at its headquarters in London the earliest possible intelligence of the arrival of raiders on the East Coast and of their movements over any part of the company's system. From almost the earliest period of the war, the station staffs, acting on instructions received by them—and more especially those on the coast—kept watch and guard for any hostile aircraft that might come within sight or hearing. Instantly there was information to communicate it was to be telegraphed to the company's headquarters in London. There it would be received in the company's central telegraph office, under the control of the Electrical Engineer, and thence sent on by telephone to the section of the Operating Department which, although known as the Great Eastern Military Office, was officered and staffed entirely by civilians, under the supervision of the Superintendent of Operation, and had as its special function that of dealing with all naval and military movements and matters in which the Great Eastern was concerned.

Under the scheme subsequently arranged between the Railway Executive Committee and the military authorities, intelligence thus

FIG. 3.

PIN-MAP AS IT APPEARED AT CLOSE OF RAID OF SEPTEMBER 2ND–3RD, 1916.

To face p 432

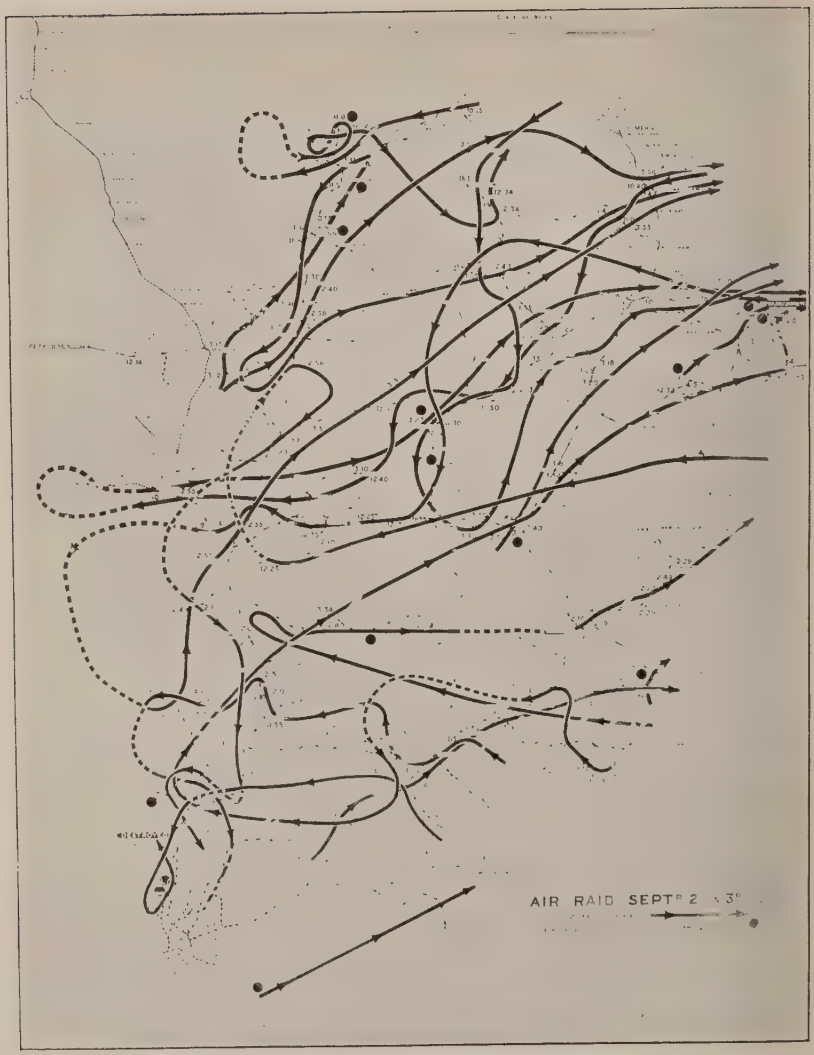


FIG. 4.

MAP SHOWING RAIDERS' MOVEMENTS AS "LINED-OUT" FROM FIG. 3.

[*To face p.* 423.]

obtained by railway companies from their own staffs and communicated to the committee was sent on by telephone to General Headquarters, Home Forces. Apart, however, from this general scheme, and apart, also, from the useful purpose served in enabling the company to keep in touch with whatever might happen on any part of their system, the information collected on the Great Eastern was made to serve still another purpose and one that became a matter of extreme interest as regards the keeping of complete and permanent records of the raiders' movements.

Soon after the raids began, the company devised a method of marking the progress of an attack by hostile aircraft so that they would know approximately the position of the attacking forces and be able to give warning to other parts of their system likely to be affected. With this object in view there was prepared, in the first instance, a board, covered with cork, on which were mounted rows of white-headed pins pierced through small labels marked with time-intervals of five minutes—12.5, 12.10, 12.15, and so on—to cover a period of 24 hours (see Fig. 1). On another board, similarly constructed, there was mounted a series of pins with large heads of different colours together with other pins bearing distinctive symbols, namely, a red triangle, a black hexagon with a white circle, a miniature Zeppelin and a miniature aeroplane (see Fig. 2). These two boards were kept in the room allotted to the Military Office at Liverpool Street Station, and there was placed alongside of them a large-scale map of the Great Eastern system on which the numbers of the air-raid-warning areas included in or adjoining that system were indicated.

When news was received from a station-master (generally one located on the coast) that a raider was in the vicinity of his station, a white-headed pin bearing the appropriate time-label was stuck into the map over the name of the reporting station. As the raider proceeded over other parts of the Great Eastern system, so the course taken was marked out by other white-headed pins carrying time-labels. Similarly the localities of other raiders were recorded.

From these white-headed time-pins it was a fairly simple matter to trace the course of individual raiders, and these courses were indicated by coloured-headed pins. Thus, red-headed pins marked the course of one raider, blue-headed pins that of another, and so on. When bombs were reported to have been dropped, the locality was indicated by the insertion of a pin bearing a red triangle or a black hexagon. Should a Zeppelin or an aeroplane be brought down, the place where this occurred was marked with the appropriate symbol, as shown at the foot of Fig. 2.

Fig. 3 gives the map as it appeared at the close of the raid on September 2nd–3rd, 1916, when thirteen Zeppelins passed over the Eastern and South-Eastern Counties. The Zeppelin symbol on the North of London indicates the spot—Cuffley—where an airship was brought down in flames at 2.25 a.m. by Lieut. W. L. Robinson, who was afterwards awarded the Victoria Cross for his gallant action.

On the conclusion of a raid the Great Eastern staff prepared from the map with the pins another map giving, approximately, the routes which had been followed. The inward routes were indicated by a blue line, with arrow heads pointing in the direction travelled, and the outwards course by a red line, also with arrows.

Fig. 4 shows this "lining out" as applied to the pin-map represented by Fig. 3. It will be seen that on this occasion the Zeppelins flew all over the Eastern Counties without, as it would appear, having any particular objective, except in the case of the one that reached London—and got no farther.

Fig. 5 is a record of the air-raid on September 23rd–24th, 1916, when Zeppelins crossed the coast with the apparent intention of making for London. One of them was brought down in flames at Billericay, 24 miles east of London, and the other was compelled to land near Peldon, an Essex village nine miles from Colchester. Thereupon the others got discouraged and, not wishing to share the same fate, turned round and went off in the opposite direction.

Fig. 6 gives a map of the raid on October 19th–20th, 1917—the one in which the leading rôle, in the way of opposing forces, was played by the elements. Buffeted about by violent winds without, in the case of some of them, being able to get far inland, the airships were scattered and driven out to sea. Their actual experiences over England on this occasion are well suggested by the G.E.R. record.

Fig. 7 is of interest as illustrating the different tactics adopted by the aeroplanes which—apparently by reason of the disastrous fiasco of October, 1917—succeeded Zeppelins in the raid of January 28th–29th, 1918. Here the plan of campaign was evidently based on a concentration of forces with a view to a mass attack on London; but by this time the defences had become so strong that, as the map shows, a number of the raiders were turned back without being able to get to London at all.

Fig. 8 relates to the "farewell-visit" aeroplane raid of May 19th–20th, 1918, when several of the enemy machines were brought down. Here the evidence afforded by the map as to the way in which so many of the raiders were forced to retire before they got to London—even as compared with the corresponding number in the raid of January 28th–29th—is especially significant of the mastery we had gained over the situation. This map should also be contrasted with the sketch given on page 447, showing the wanderings of a Zeppelin on the occasion of the raid of January 31st–February 1st, 1916. It will be seen that whereas the Zeppelin in question was able to sail leisurely along until it was within a few miles of the Welsh coast, the aeroplanes taking part in the final raid of May 19th–20th, 1918, met with such a reception that the majority of them speedily abandoned the idea of getting even as far as the Metropolis, turned tail, and rushed back again like a swarm of scared cats.

Air-raid maps of the kind here described were of great value as records of events that had happened; but the G.E.R. Superintendent of Operation, Mr. F. V. Russell (now C.B.E.), wanted something more than this. He

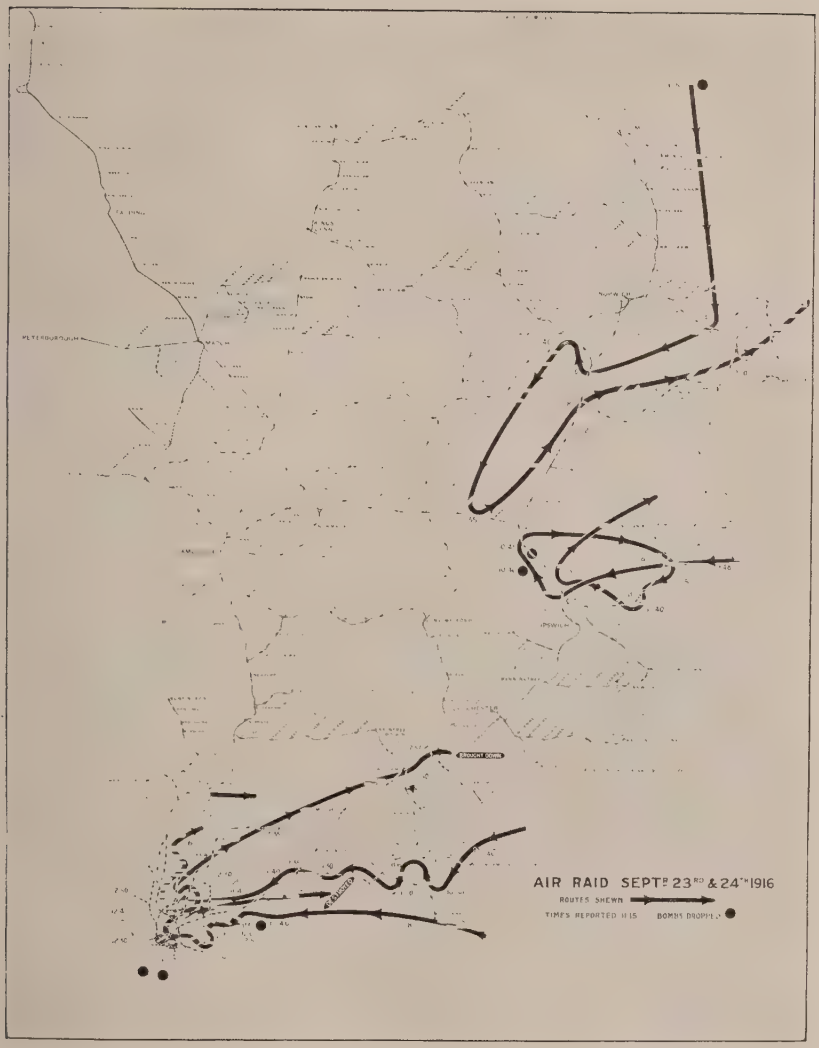


FIG. 5.

A MOVEMENTS-MAP FOR RAID OF SEPTEMBER 23RD–24TH, 1916.

[*To face p.* 424.

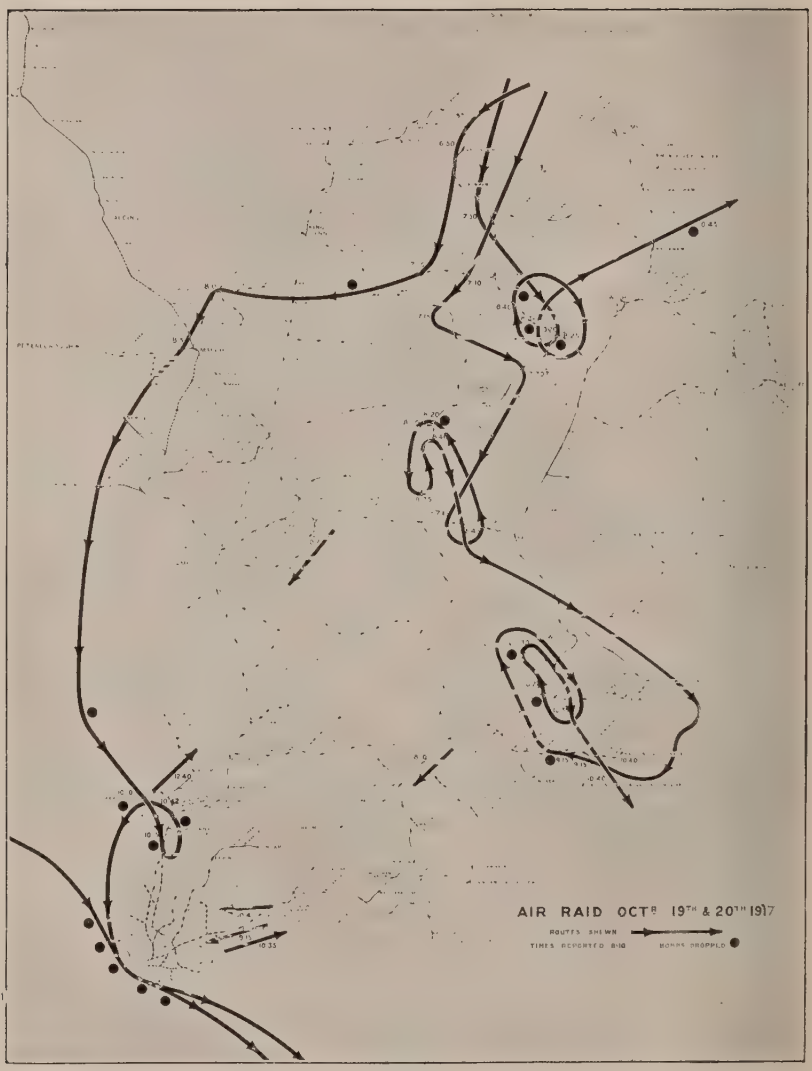


FIG. 6.

RAID OF OCTOBER 19TH–20TH, 1917.

(Showing how the Raiders were buffeted about by the violent winds.)

[To face p. 425.

wanted to foresee, as far as was practicable, events that might occur—in other words, when air-raids were to be expected. If this could be done his company would be in the position of, at least, not being taken unawares.

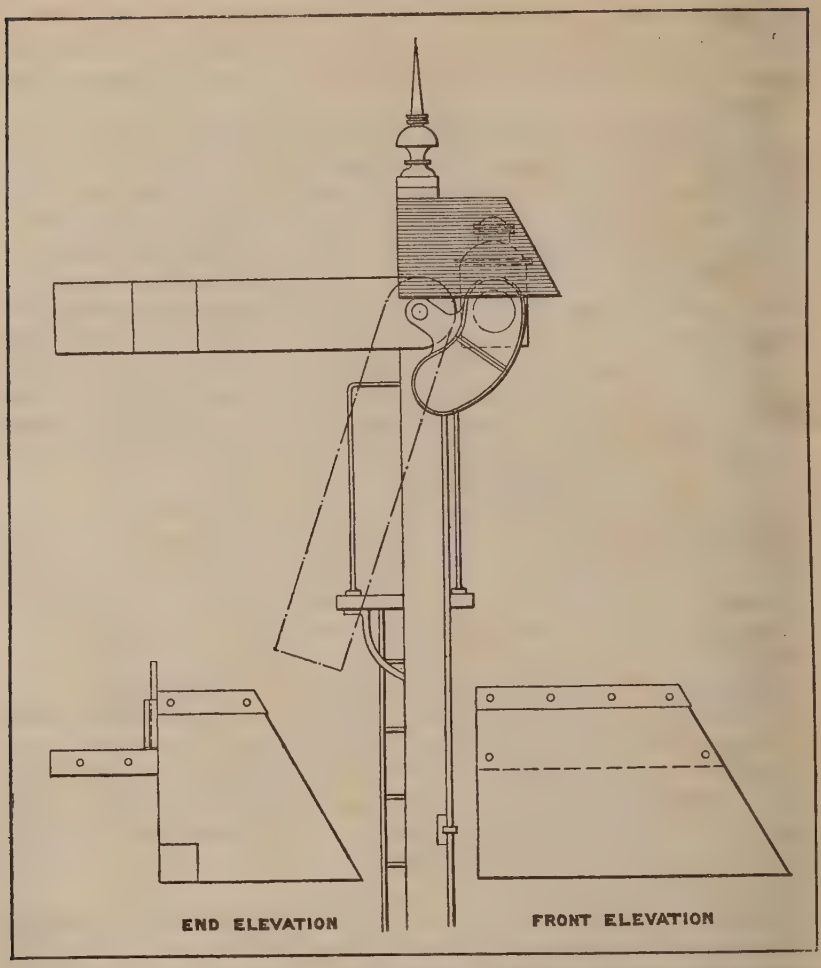
So it was that Mr. Russell arranged for the preparation and preservation at Liverpool Street of a continuous series of barometrical charts designed to cover the period from the earliest days of the war to the close of hostilities, and, in addition to the ordinary barometrical readings, to give certain details in regard to each and every air-raid on the Eastern Counties. Thus the charts show the phases of the moon on these occasions, with hour of rising and setting; the time, in hours, over which each raid extended, and the type of aircraft used. In regard to night raids, they indicate whether these occurred during a period of darkness (as in the case of the Zeppelins), or during a period of moonlight (as in the case of aeroplanes). Daylight raids are similarly indicated so far as concerns the hour and duration of visit; but for these a different diagram is used to distinguish them from night raids. (See Fig. 9, facing p. 428.)

The charts give conclusive evidence that the enemy invariably approached our coasts on a rising barometer of about 30 inches, and they suggest that in many cases he arranged his visits so that on his homeward journey he recrossed the North Sea under the protection of a slightly retrograde barometrical reading—with a view to discouraging any organised pursuit.

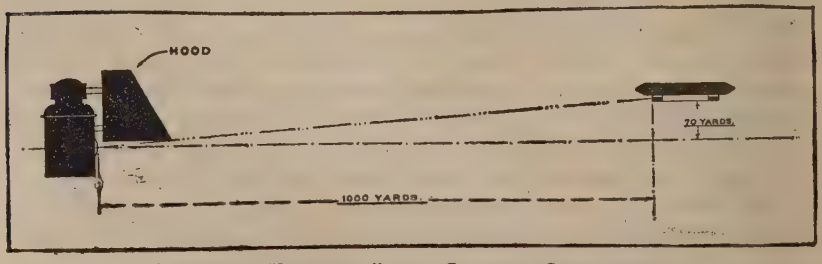
So practical, in fact, were the lessons taught by the preparation and the careful study of these charts that it was possible to predict from them, almost from day to day, when a raid might, at least, reasonably be expected; and though raids did not always take place on occasions when they *could* have been made, the experience of the Great Eastern Company was that they rarely occurred when the barometrical conditions were seen to be unfavourable, and when, consequently, Liverpool Street had *not* expected them.

Thanks to the possibility of thus forecasting, often several days in advance, what was likely to happen, the responsible officers of the Great Eastern Railway were able to take special precautions for safeguarding the company's property on a large number of occasions when the anticipations of an early raid which they had based on the barometrical charts were duly fulfilled.

One inference drawn from the charts is that there must have been very close co-ordination between the enemy's meteorological experts and his aerial command. In any case it may confidently be affirmed that the records now preserved at the headquarters of the Great Eastern Railway Company should be of invaluable service in connection with a resort to air-raids in any future war in which this country may be concerned, or, at least, as a contribution towards that "full story of the bearing of the weather on the various phases of the war" which, as remarked by the Meteorological Correspondent of *The Times*, in an article on "Air-Raids and the Weather," published in that journal September 27th, 1920,



How the G.E.R. Signal-lights along the East Coast were "Screened" against the Raiders.



"Angle of Visibility" of a Shielded Signal-light.

FIG. 7.

AEROPLANE RAID JANUARY 28TH & 29TH 1918

APPARENT INWARD ROUTE SHOWN THUS, ← TIMES REPORTED (9.3) P.M.

APPARENT OUTWARD ROUTE SHOWN THUS → BOMBS DROPPED ●

[To face p. 426.

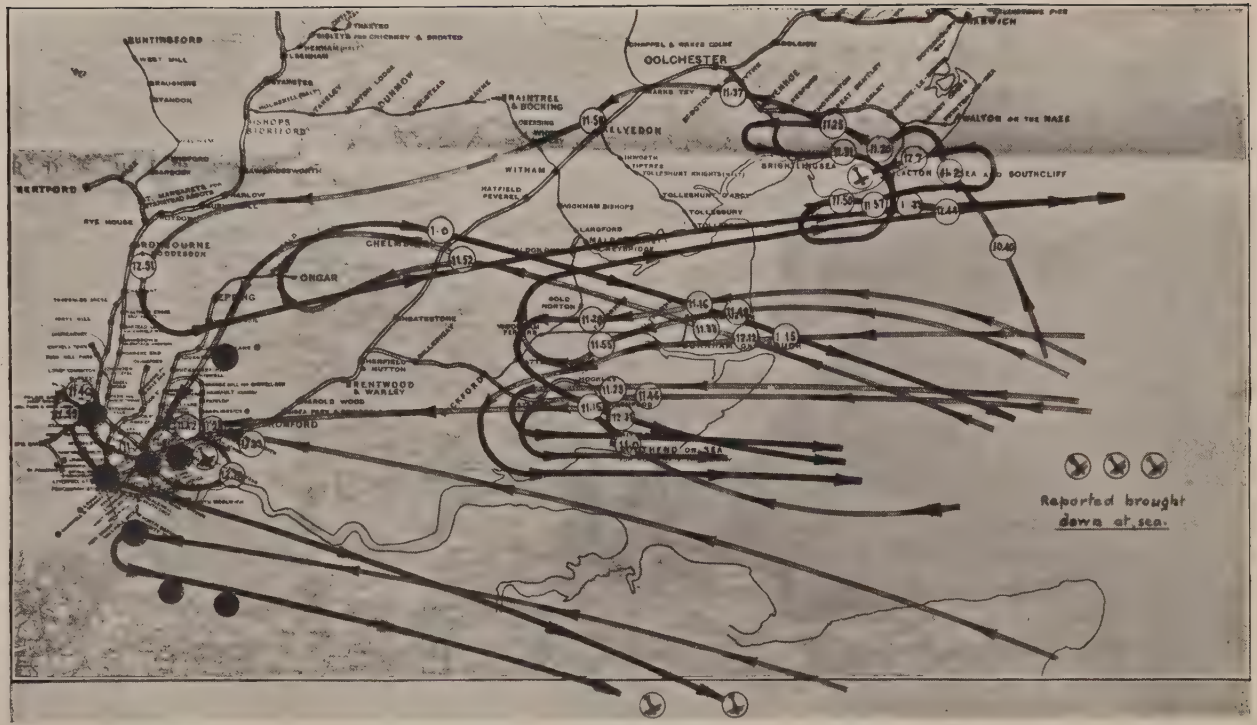


FIG. 8.

AEROPLANE RAID MAY 19TH & 20TH 1918

APPARENT INWARD ROUTE SHOWN THUS ← TIMES REPORTED (10.45) P.M.

APPARENT OUTWARD ROUTE SHOWN THUS → BOMBS DROPPED ●

[To face p. 427.

" remains to be told, but, when written, will constitute a fascinating and by no means unimportant chapter in the history of the great conflict."

Among the other anti-air-raid measures resorted to by the Great Eastern Company, the method which, as mentioned on page 396, was designed by them for screening railway signal-lights on the coast may be regarded as exceptionally interesting, while evidence of the effectiveness of the arrangement is afforded by the fact that in April, 1916, the Railway Executive Committee recommended the system for adoption by other railway companies operating lines under like conditions.

From actual observations, taken at a considerable elevation, there was evidence to show that when Zeppelins were approaching our shores at night they received material guidance and direction from railway signals. As soon as this risk had been indisputably established, the Operating Department at Liverpool Street instituted a series of tests with a view to checking effectively the raiders' vision by screening the signal-lights in such a way as to prevent any appreciable radiation of light in an upward direction whilst still preserving an uninterrupted view of the signals from the footplate of an engine.

The point to be determined in the first instance was the altitude to which, at given distances and under varying conditions, aircraft would have to descend towards a line drawn from the centre of the bull's-eye of the signal before the light therefrom could be distinguished by the raiders. This " angle of visibility " was ascertained by one of those concerned in making the experiments walking, on a dark night, a certain distance—say 1,000 yards—from an illuminated signal-lamp placed on the level, and then, turning at right angles to the line he had taken, continuing in the fresh direction until a point was reached beyond which the light could no longer be seen. The combination of these two points with the bull's-eye of the signal-lamp gave the angle of visibility within which, alike on the level and in the air, the signal-light could alone be seen.

Next came the question as to what would be the actual degree of difference for the raiders in their powers of observance between unshielded and shielded lights, and, assuming that the latter would offer them the greater handicap, in what position, in respect to the light, the hood should be fixed on the signal-post in order to ensure the best results.

Not until a considerable series of tests, experiments and calculations, carried out on a strictly scientific basis by the Great Eastern staff, and involving the preparation of diagrams covering the whole range of possibilities, had been made were these and other points concerned determined. Here it may suffice if we deal with the results ascertained in relation to the 1,000 yards distance in order that the position may be made clear to the reader without going into too much detail.

With non-shielded signal-lights it was found that, at the distance stated—1,000 yards—the lights would be seen from approaching aircraft when the raiders were at an altitude of not more than 400 yards above a line drawn from the centre of the bull's-eye, or, allowing ten yards as

the average height of the signal-lamp on the post, approximately 410 yards above the ground. When a metal hood was fixed over the light in such a way that its lowest edge was on a level with the top of the bull's-eye, the raiders would have to descend to an altitude above the ground of 160 yards before they saw the light; whilst by fixing a hood so that the base would be one inch above the centre of the bull's-eye, it was found that before the raiders could then see the light, when they were at the 1,000 yards distance, they would have to come down to an altitude of only seventy yards above a line drawn from the centre of the bull's-eye, and, therefore, dangerously close to any anti-craft defences that might have been provided on the ground immediately below them.

It was this last-mentioned arrangement in regard to the position of the metal hood on the signal-post that was finally adopted, and, whilst there was no loss of effective vision for the engine-drivers and others concerned in working the traffic, it may safely be affirmed that, on the adoption of the shielded-lights system, which placed the raider at a disadvantage of 333 yards with regard to the height from the ground at which he could obtain a view of signal-lights, the enemy in the air no longer had any guidance from railway signals that might be within a mile or so of the coast.

Other measures taken included the supply to every Great Eastern station-master of a copy of the "Standard Instructions" issued by the Railway Executive Committee in regard to the operation of railways during air-raids. Each received, also, a copy of an eight-page foolscap circular, issued by the General Manager, giving "Supplementary Arrangements to be observed on the Great Eastern in carrying out the instructions set out in the Railway Executive Committee's circular in regard to attack by hostile aircraft." These supplementary arrangements dealt mainly with technical details in connection with the working of the lines on the occasions in question; but the following items may be quoted as illustrating the thoroughness with which everything was planned:—

Ambulance Arrangements.—Station-masters should see that ambulance men at the station in their charge are organised in order that assistance may be promptly rendered in case of necessity.

Police.—The company's police must be advised by the station-master with a view to their assisting the public in taking cover as well as protecting as far as possible the company's property. At large stations the police should take up their position at the exits and entrances to avoid the collection of undue crowds. Constables on this duty must be instructed to use reasonable discretion in allowing a passage to company's servants and others who have a duty to perform.

Fire Arrangements.—Special steps must be taken to cope expeditiously with fires, either by the immediate use of any available fire apparatus or by obtaining the assistance of the local fire brigade.

As regards the damage done by the raiders to Great Eastern property, the first occasion on which Liverpool Street Station was struck by bombs was in connection with the raid on the night of September 8th, 1915. Some of the bombs then dropped fell in Sun Street passage, between the

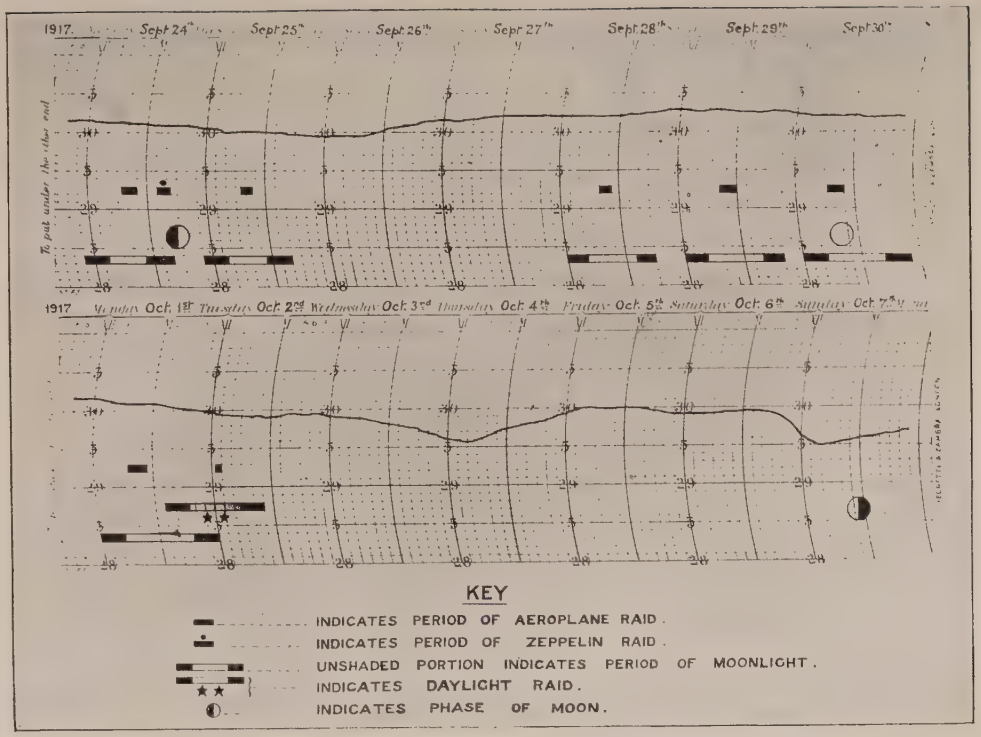
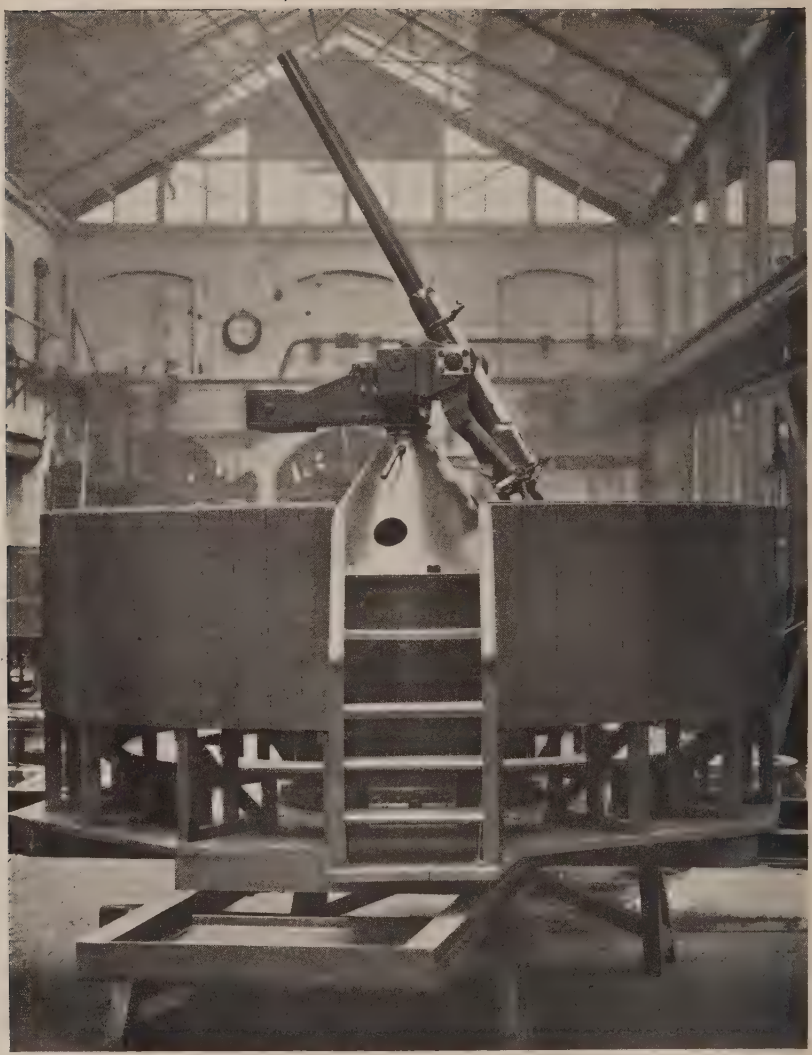

1917. Sept 24th Sept 25th Sept 26th Sept 27th Sept 28th Sept 29th Sept 30th
1917 Monday Oct 1st Tuesday Oct 2nd Wednesday Oct 3rd Thursday Oct 4th Friday Oct 5th Saturday Oct 6th Sunday Oct 7th
KEY
INDICATES PERIOD OF AEROPLANE RAID.
INDICATES PERIOD OF ZEPPELIN RAID.
UNSHADED PORTION INDICATES PERIOD OF MOONLIGHT.
INDICATES DAYLIGHT RAID.
INDICATES PHASE OF MOON.

FIG. 9.

SPECIMENS OF THE BAROMETRICAL CHARTS KEPT BY THE GREAT EASTERN RAILWAY COMPANY THROUGHOUT THE WAR TO SHOW METEOROLOGICAL CONDITIONS ON THE OCCASION OF AIR-RAIDS.

[*To face p.* 428.



6-PDR. NORDENFELDT ANTI-AIRCRAFT GUN.

Early in 1915, when the enemy air-raiders began to get active, it was deemed desirable that special measures should be taken for the protection of Ordnance factories, explosive works, etc., and in the first instance the decision was arrived at to adapt some existing 6-pdr. Nordenfeldt guns to anti-aircraft purposes. The assistance of the railway companies was thereupon sought in the building of steel ground-frames carrying a timber loading-platform and pedestal to take the gun, and so constructed that the gun could be readily elevated, lowered or moved round in any direction, while the men in charge would have ammunition immediately alongside on whatever part of the platform they stood. Gun and mounting—modified to suit the special requirements—were alone furnished by the authorities.

The above photograph, showing the complete arrangement and the anti-aircraft gun at maximum elevation, is that of one of fifty sets supplied from the Great Western Railway Company's Locomotive and Carriage Works at Swindon and sent to Government establishments in all areas likely to be visited by the raiders.

[To face p. 429.

Liverpool Street and Broad Street stations, the wall of the latter being damaged. Another fell on the Great Eastern West Suburban lines, just outside the arcade, and another on the main lines near Bishopsgate Street, close to the main signal box for Liverpool Street Station. In this instance there was a narrow escape from the serious trouble that would, indeed, have been caused had the box been wrecked. The signal, locking and other appliances were to a slight extent affected, but the damage was much less extensive than might have been expected, and the traffic was dislocated to only a comparatively slight extent. Still another bomb went through a roadway over the Great Eastern lines, split a very large water-main, and penetrated a substantial over-arch before striking the permanent-way underneath. Damage was also caused to the gas-main, the electric light service, and the high-pressure water-main (supplying hydraulic lifts, etc.).

There are three pairs of roads connecting Liverpool Street Station with the country, known as the "Suburban," "Local," and "Through" roads respectively; and, summarising the damage done to them by the raid under review, it may be said that the suburban and through roads were smashed up; the local roads were flooded to a considerable depth; signal-gear and point-rods were broken, and Liverpool Street Station and Hotel were completely cut off from gas, electricity and water for hydraulic purposes.

Yet, as illustrating the futility of bombing railway property on the level, the fact may be added that, although the company could not get to work to repair the damage to the lines until after midnight, the complete train-service had been resumed by 11 o'clock the same morning, any inconvenience caused to the travelling public being extremely slight.

An especially interesting incident in connection with the damage caused on this occasion to the West Suburban side of the station lies in the fact that, whilst heavy rails were shattered by the falling bomb, delicate and sensitive electrical telegraphic instruments in the signal box close by remained entirely unaffected.

When the enemy made their daylight raid on London on June 13th, 1917, Liverpool Street Station had a most unfortunate experience. Three bombs were dropped on the country end of the station at about 11.45 a.m., wrecking several carriages on the 12 noon train for Hunstanton, which was standing at No. 9 platform, loading up for departure, and, also, two carriages in the dock between Nos. 8 and 9 platforms, in use at the time by a Medical Board for the physical examination of G.E.R. recruits. On this occasion sixteen persons were killed and thirty-six injured, and, of these, ten and twenty-three respectively were members of the Great Eastern staff.

Outside London, however, any damage done to the company's property by the raids was comparatively insignificant. It involved, more especially, little or no interruption of traffic. From this point of view the raids were, indeed, to be regarded as a fiasco; and the experiences of the Great Eastern Company in so exposed and so apparently vulner-

able a district are especially important as establishing the said fact beyond any possibility of dispute.

There is no need to place on record here all the incidents which occurred on or alongside the Great Eastern system in connection with the raids, but the following may be regarded as typical examples thereof :—

Bishopsgate Goods Station, E. :—

May 31st, 1915. Midnight.—A bomb dropped in the goods yard passed through an office and set it on fire. Another fell near the G.E. generating station in Bishopsgate, though without doing damage to the company's property.

July 7th, 1917. 10.30 a.m.—Bombs dropped in goods yard. Seven wagons damaged ; three derailed. Awning on suburban side, arches underneath, and part of the boundary wall damaged.

May 19th, 1918. Between 11.30 p.m. and 1 a.m.—Large number of panes of glass broken in roof by shrapnel from anti-aircraft guns.

Leman Street Station, Whitechapel, E. :—

Oct. 13th, 1915. 11 p.m.—Station premises badly damaged by a bomb. Up and down fast and slow lines blocked.

Stratford Station, E. :—

June 13th, 1917. 11.45 a.m.—Bombs fell in the coal yard. A few trucks slightly damaged, and a porter slightly injured.

July 7th, 1917.—Bomb dropped opposite running-shed office, but did not explode.

Sept. 4th, 1917.—Bombs dropped alongside the railway between central and western junction signal boxes. No damage to lines, but telegraph wires brought down.

Sept. 30th, 1917. 8.30 p.m.—A missile either from our own guns or from enemy aircraft penetrated the drivers' dormitory and seriously injured a driver, who died next morning. Two other drivers were slightly injured. A rail in the loco. coal siding was blown out by the projectile and three engines were slightly damaged.

Dec. 18th, 1917.—An unexploded shell struck and penetrated the roofing of the running-shed, piercing the boiler of an engine. The fire had been drawn from the engine two hours previously. Another bomb fell in the yard of the electric power station, but caused no damage. Still another fell on the railway lines near Western Junction, damaging one sleeper.

Lowestoft :—

April 16th, 1915. 1.5 a.m.—Bombs dropped. Two of the company's horses killed and one injured. Three parcels carts, two lorries, two goods vans and the horseman's shelter were damaged. Windows in station and in yard signal box were broken and some telegraph wires brought down. An adjoining timber yard set on fire.

Feb. 20th, 1916. 11 a.m.—Bombs dropped on parcels office and harbour yard caused slight damage to works, booking and parcels offices. Creosoting cylinder pierced, but fire extinguished at once.

Yarmouth :—

Sept. 2nd, 1916.—At 10.15 p.m. seven bombs dropped. No damage to company's property. About 11.15, and again at 11.55 p.m., bombs dropped all around the town. No damage done except broken windows. Incendiary bombs dropped near station abortive.

Stowmarket :—

March 31st, 1916. 10.40 p.m.—Bomb dropped in 6-ft. way main line about 100 yards Needham side of Explosive Works. Rails on both up and down roads smashed. Hole 6 ft. in diameter and 3 ft. deep caused in 6-ft. way. All telegraph wires brought down.

FELIXSTOWE :—

July 22nd, 1917. 8.15 a.m.—Bombs dropped. Two houses close to the platform at the Town Station considerably damaged and a square of glass broken in the platform covered way. At the Beach Station five panes of glass were broken in the signal box, a goods brake was pierced in several places, a hand rail was partly cut through, and about 10 ft. of wire fencing alongside the line was damaged.

SOUTHEND :—

May 10th, 1915. 3 a.m.—Five incendiary bombs dropped near station, but no damage done to G.E. property.

August 12th, 1917. 6 p.m.—About 40 bombs, explosive and incendiary, dropped on town. They fell on each side of the station and within a few yards of the company's premises. One explosive bomb fell in the goods yard. The only material damage done was at the station, and there it consisted mainly of broken windows. Guard Humphreys, who was on his way to the station to take on duty, was killed. No one was killed on the station, but a few yards away many persons were killed or injured.

PARKESTON :—

August 12th, 1915. 11.15 p.m.—Bombs dropped. No damage to station, but a fireman was severely injured and a cleaner slightly. Damage was done to the company's cottages in the village and about eighteen persons were injured.

PARKESTON AND HARWICH :—

July 22nd, 1917. 8.15 a.m.—Bombs dropped in the neighbourhood of Parkeston and Harwich, but no damage done to the line.

HARWICH :—

April 25th, 1916. 10.30 p.m.—Bombs dropped. No damage to the railway.

Sept. 2nd, 1916. 2.30 a.m.—Four or five bombs dropped in Harbour. Concussion broke booking-office windows and glass in two or three houses at station entrance.

FAIRLOP (CHIGWELL LINE) :—

April 25th, 1916. 12.50 a.m.—Bombs dropped in roadway, damaging station-master's house. No personal injury.

BURY ST. EDMUNDS :—

March 31st, 1916. 12.15 (midnight).—Bombs dropped. Telegraph and telephone communication cut between Bury and Haughley.

RAYLEIGH :—

October 29th, 1917. 10.45 p.m.—Bomb dropped in roadway, smashing water-main and, also, windows in station buildings and some tiles on the station-master's house.

The Germans had thought that, as the result of their raids, they would fill the minds of the British public with deadly terror. It was certainly a time to take every reasonable precaution against possibilities; but, so far as railwaymen in general and Great Eastern Railway employees in particular were concerned, their attitude may be typified by an incident which occurred during the course of one of the raids on East Anglia. The Military Office at Liverpool Street inquired of a certain station there how things were going on. They received the cool and matter-of-fact reply: "Bombs now falling in the station yard."

Reasonable precautions were, indeed, taken as a matter of ordinary prudence both for the protection of the staff where danger specially

arose and to ensure continued working of the lines and the maintenance intact of the anti-aircraft arrangements, whatever the raiders might otherwise be able to do.

The need for such precautionary measures was shown, in the first instance, by the raid of September 8th, 1915, when, as we have seen, so much damage was done to the Liverpool Street Station and surrounding property. Some of the bombs dropped on that occasion fell within twenty or thirty yards of the telegraph rooms of the Electrical Engineer's Department which constituted the telegraphic "nerve centre" of the entire Great Eastern system in regard not alone to the receipt of messages concerning the movements of the raiders throughout the Eastern Counties, but for the working of the Great Eastern system as a whole. The rooms in question are situate on the top floor of a wing of Hamilton House, Bishopsgate—a block of buildings the back wall of which forms the boundary wall of Liverpool Street Station along No. 18 platform. The telegraph offices appeared to be in so vulnerable a position—having regard to their elevation and to the fact that the wing is built on arches over the country end of Liverpool Street Station, which the rooms overlook—that the Electrical Engineer, Mr. H. W. Firth, fitted up in the basement of Hamilton House (such basement being below the level of Bishopsgate though on the level of No. 18 platform, with direct access therefrom) an emergency office in which all the essential telegraphic and telephonic installations of the ordinary office were duplicated, provision being made for the immediate switching on and changing over of all the wires from the upper room to the cellar whenever the occasion for so doing arose. By first sending part of the staff down to the basement, the change-over was effected with practically no interruption whatever, and the telegraphists could then continue their work with a massive five-storey building above their heads.

This was the pioneer railway "dug-out" in London, and it attracted much interest in railway circles. It was protected by sand-bags alike on the Bishopsgate side and on the station-platform side, and it was resorted to by the telegraphic staff whenever the raiders were reported to be west of Brentwood—eighteen miles from Liverpool Street Station—though not until then. Members of the public were occasionally admitted as well, and the two comparatively small cellars available sometimes sheltered as many as sixty persons. The cellars were easily reached from the upper storeys of Hamilton House by means of the lift, supplemented by steps.

The desirability soon arose of ensuring similar protection to the members of the Great Eastern staff employed alike in the military department, in the General Offices, and in Liverpool Street Station. On two occasions important telephone communications from the War Office to the Great Eastern Railway Company's Military Office were momentarily interrupted by the explosion of bombs in the neighbourhood of Liverpool Street Station. The sound of the explosions in both instances was clearly transmitted through the telephone to Westminster. It speaks

well for the *moral* of the railway staff engaged on military work that they could still calmly carry on their duties amidst the deafening din of bombs dropping within a few yards of them. Indifference to personal risk and danger was manifested even by the junior clerks in the office. All the same it was necessary to ensure that, while the nerves of the staff might remain undisturbed, there should be no interruption in the working of the anti-air-raid scheme; and action in this direction was taken accordingly.

Underneath Liverpool Street Station and the adjoining Great Eastern Hotel there are some extensive cellars situate at such a depth that, allowing also for the buildings above, no bomb the raiders might let fall would be likely to get to them. In one of these cellars there was fitted up an office which, for all practical purposes, was a duplicate of the one used by the Great Eastern Military Office under normal conditions. In addition to other accessories it was provided with a complete set of telegraph and telephone instruments, and connections were so arranged that the wires from the General Offices could be switched on at a moment's notice. The work done above-ground could then be continued underground with no more interruption than that involved in the moving of the staff from their ordinary room into their "dug-out." Electric light and other conveniences were assured to them, and, though the staff had not been scared before, there was no cause for their being in any way uneasy now.

Other parts of these same cellars were utilised as refuge-accommodation both for the Great Eastern staff in general and for such of the public as might wish to make use of them. The ramifications of the cellars are somewhat suggestive of a rabbit-warren; but the company devised an elaborate system of directions by means of arrows, notice-cards of different colours, and warnings in respect to passages having no exit, and there was no reason why anyone going into the cellars should get lost. Refuge-accommodation was also allotted in and around Liverpool Street Station to particular departments as well as to signalmen, drivers and the station staff. In this way everyone knew exactly where he or she could and should go in case of need, with every hope of security and without risk of overcrowding. When an air-raid on London appeared imminent, warning was given from the Great Eastern Military Office by means of three distinct rings on the various fire-bells. The staff thus had ample time to reach their respective places of safety.

There was, of course, the possibility that casualties might occur in spite of these precautions; but here, again, the arrangements made were on the most complete scale. The second-class waiting-room (entered from the booking hall) on No. 9 platform was set aside for ambulance purposes and kept supplied with a complete outfit of stretchers, dressings and all necessary appliances for dealing with any such number of injured as might, so far as could be foreseen, be in need of attention. Lists of men on the company's staff who were qualified to render first-aid were kept in this room as well as in two other offices at headquarters, and, in

the event of an emergency arising, members of the Ambulance Corps who were then on duty at Liverpool Street Station were to report themselves at once at the extemporised depôt. In the aforesaid waiting-room and offices there was also kept a list of doctors in the vicinity of Liverpool Street, with particulars of telephone numbers, etc., so that medical assistance could be promptly called for, if required. In addition to this the Hotel Department was, on an emergency, to requisition the services of any medical men staying in the hotel.

Then, also, the Engineer-in-Chief, the Fire Superintendent, and the company's Chief of Police (who controlled a staff alike of ordinary and of special constables) knew by means of a circular issued by the General Manager to all concerned exactly what they should do whenever an emergency arose.

Thus it was that the Great Eastern Railway Company prepared for the enemy raiders; and, having regard to the situation of their lines and to the other circumstances of their position, they came through the ordeal very well indeed, and with far less injury to property and person than might have been anticipated.

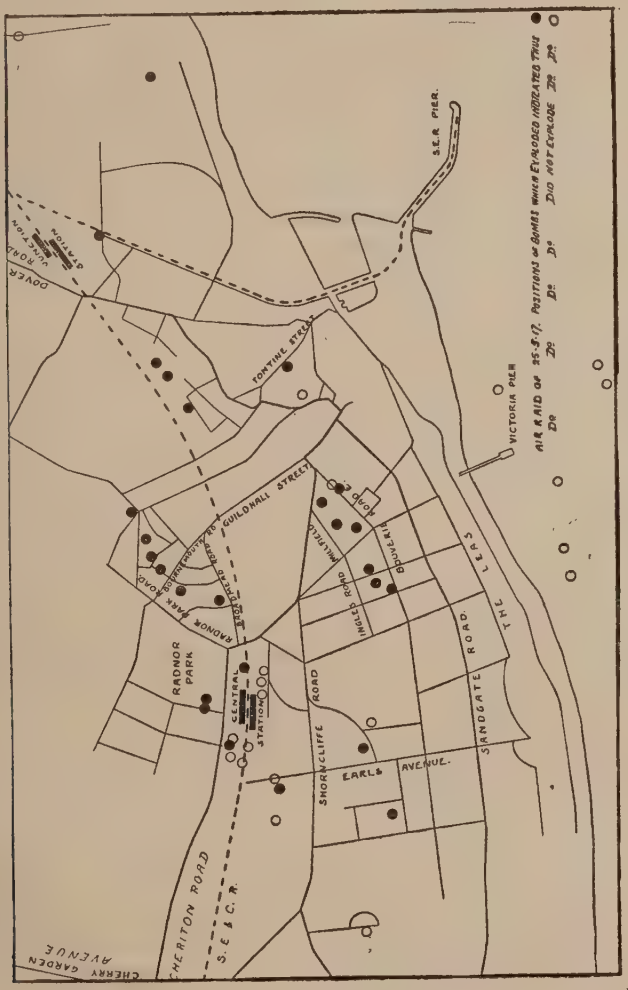
South Eastern and Chatham.

It was at Dover that the enemy air-raiders dropped, from an aeroplane, their first bomb on English soil. This occurred on December 24th, 1914. The bomb was probably meant for the Castle. It fell, instead, in a garden and did no harm. In 1915, out of twenty-four raids on Great Britain there were only five (three airship and two aeroplane) in which Kent and the South Eastern Railway were affected; but one of those occasions was significant of much that was to follow. An exceptionally important work was being done in the maintenance of communications with France, and a great deal was going on at Dover, especially in connection with the Admiralty Pier and the railway stations, which the enemy might well desire to prevent. So it was that on the night of August 9th–10th, 1915, shortly after midnight, a Zeppelin passing over Dover managed to drop three bombs on the Admiralty Pier. One of them fell on a searchlight emplacement, but did no more than discolour the granite blocks. The two others fell on the landing stage at the Admiralty Pier Extension and made a hole in the woodwork. Other bombs dropped on the same occasion were still less successful. They fell in the sea.

This was the enemy's second attempt on Dover in 1915. He made no more until 1916. Of his twenty-two raids by airship on England and Scotland in that year there were only six in which Kent was concerned; but in regard to aeroplane and seaplane raids, fifteen of the sixteen made in 1916 included Kent, while all of these, excepting two, were on Dover, Deal, Margate, Sheerness or other parts of Kent exclusively. More attempts were now made on the Admiralty Pier at Dover. Much damage was done in the town, where a number of people were

killed or injured, yet no harm was occasioned either to the pier or to the railway.

With the introduction of the Gothas, the county of Kent was to receive a greater degree of attention from the enemy. It was on the



AIR RAID ON FOLKESTONE, MAY 25TH, 1917.
(Reproduced from "Folkestone During the War.")

afternoon of May 25th, 1917, that the Gothas paid their first visit to England, and the object they had in view on that occasion was, apparently, a raid on the railway communications at Folkestone. Great numbers of troops were being embarked there for the Western Front, and any serious check put upon the flow of reinforcements by an interruption

of railway communications might have been of material advantage to the enemy. Seventeen Gothas took part in the raid and the number of bombs they dropped on Folkestone, exclusive of six which fell into the sea, was forty-five. For their own safety's sake, the raiders kept at a good height, estimated at from 8,000 to 10,000 feet; yet of the said forty-five bombs they managed to drop nearly one half within a radius of between 300 and 400 yards of Folkestone Central Station. One of the bombs fell between the up and the down lines, at the station, but did not explode, and the small amount of damage it did was soon repaired. Other bombs fell near the Junction Station, situate about one mile from the Central Station; but these did no harm. The combined efforts even of seventeen Gothas failed to cause any interruption whatever of rail transport. What the raiders did accomplish was to slaughter seventy-seven civilians (of whom fifty were killed by a single bomb, which fell in Tontine Street) and injure ninety-four others, while a bomb dropped on Shorncliffe camp killed eighteen and wounded ninety-eight of the Canadian troops quartered there.

After this initial experience with their new instruments of destruction the Germans employed them on a long series of raids, in the majority of which the county of Kent was concerned.

The enemy's design evidently was that, with London as his main objective, he would seek to get there either by way of the Kent coast or by passing along the Thames estuary and river, with deviations into Kent and Essex *en route*, according to circumstances. Whereas, in fact, comparing 1916 and 1917, he reduced the number of his airship raids on England and Scotland from twenty-two in the former year to six in the latter, he increased the number of his aeroplane raids from sixteen to twenty-seven. Of this number, twenty-one included Kent. On thirteen occasions out of the twenty-one the enemy got no farther than Kent. On seven he made raids on London viâ Kent and Essex.

From a railway point of view this change of plan meant that, whilst the Great Eastern had hitherto been especially concerned in the Zeppelin raids, generally made on or by way of the Eastern Counties, it was the South Eastern and Chatham who were mostly affected by the increased number of aeroplane raids under the new conditions.

Dover now received the special attention of Gothas which either could not get further inland by reason of our defences, or else passed over the town on their way to or from London or as far in that direction as they could get. Heavy casualties were occurring at Chatham and Calais, and, having regard, also, to the greater weight of the bombs now being used by the enemy, it was thought expedient to adopt exceptional means for ensuring, as far as might be practicable, the safety of the populace of Dover. Two sets of caves, provided with electric light and seating accommodation, and placed under the control of local committees, were in almost daily use by some thousands of people; other public shelters were arranged for in the park; the Royal Engineers

stationed at Dover cut tunnels into the cliffs with the help of a Labour Corps, and many of the local residents who occupied houses situate along the cliffs made dug-outs for themselves and their families in their back gardens. Altogether accommodation was secured at Dover for the sheltering of about 25,000 people.

In 1918 there were eight aeroplane raids, and Kent was concerned in each of them. Seven of the eight followed the route of Kent, Essex and London, with the addition, in one instance, of Hertfordshire and Bedfordshire. The eighth of the series occurred on July 17th, 1918, when the raiders paid a farewell visit to Kent and to England, doing on this occasion no harm whatever.

The total number of bombs which fell within the precincts of Dover borough during the air-raid period was 370.

Having regard to the proportions of this figure, Dover suffered much less than might have been expected. There certainly were some lamentable casualties among the townspeople, and a number of houses and shops were either wrecked or badly damaged. It is, however, doing the enemy no injustice to suggest that he really aimed at accomplishing much more than this. He must have wanted especially to secure definite strategical advantages by destroying, if possible, the railway lines, the railway stations, the Admiralty Pier and the new harbour. He did succeed in dropping four incendiary bombs on the Hawkesbury Street crossing, close to the Harbour Station, and one bomb fell in the goods yard of the Priory Station; but in neither instance was any damage done, and the main lines were unaffected. Houses alongside the Dover stations got badly served; but, if the stations themselves suffered, it was mainly from the shrapnel fired at the enemy by our home-defence parties. The Admiralty Pier, the new harbour and the new station were practically uninjured. There was no interruption whatever of through communications between England and France, and the strategical gains of the enemy from his 370 bombs were, therefore, *nil.*

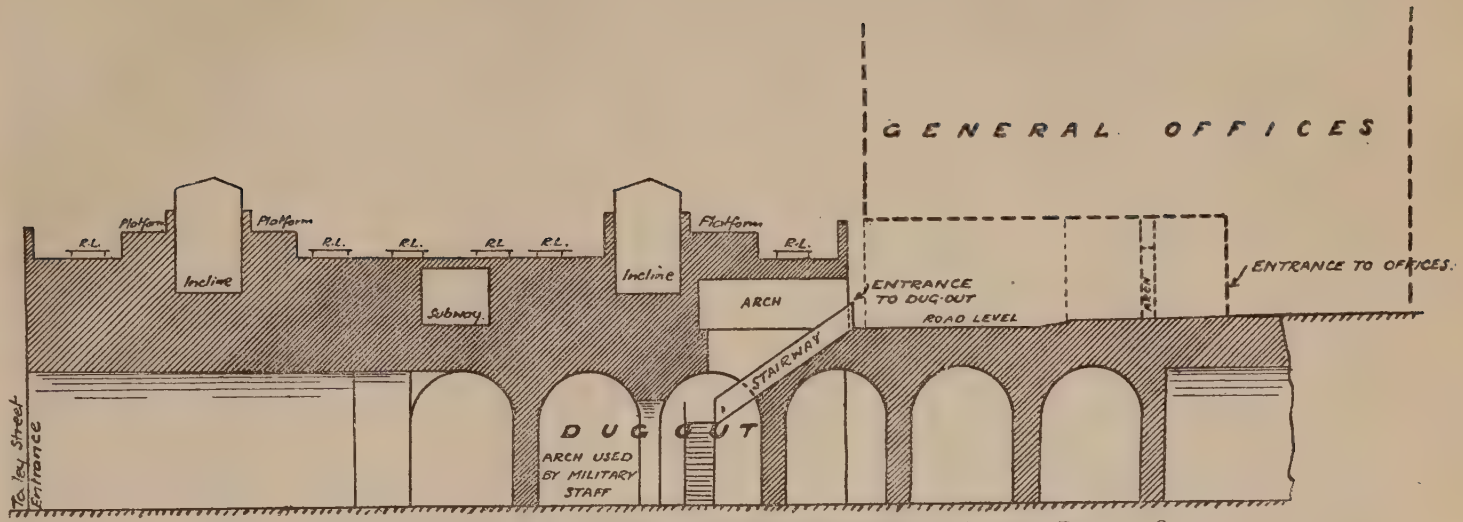
What, also, was true of Dover was no less true of Folkestone and of the other towns or districts served by the South Eastern and Chatham Railway—looking at the situation, for present purposes, solely from a transportation point of view.

These results were the more remarkable since, as will be seen from the following table, Kent was concerned in more than one-half of the total number of aircraft raids on Great Britain, while more than one-fourth of that number were either made on Kent only or, at least, got no further than Kent :—

	1914.	1915.	1916.	1917.	1918.	Total.
RAIDS ON GREAT BRITAIN :—						
Airship	—	20	22	6	3	51
Aeroplane	2	4	16	27	8	57
Total	2	24	38	33	11	108
RAIDS WHICH INCLUDED KENT :—						
Airship	—	3	6	2	—	11
Aeroplane	2	2	15	21	8	48
Total	2	5	21	23	8	59
RAIDS ON LONDON VIÂ KENT AND ESSEX :—						
Airship	—	1	—	—	—	1
Aeroplane	—	—	—	7	7	14
Total	—	1	—	7	7	15
RAIDS ON KENT ONLY :—						
Airship	—	1	1	—	—	2
Aeroplane	2	2	13	9	1	27
Total	2	3	14	9	1	29

The headquarters of the South Eastern and Chatham anti-air-raid scheme were at London Bridge Station, and, in view of all that was happening alike on the system in general, along the course of the Thames and in London itself, the need arose for the taking of measures to ensure, not alone the safety of the staff at London Bridge but the continuance, without interruption, of the said scheme, on the safe working of which so much might depend. The adoption of these precautionary measures was, however, a more troublesome matter at London Bridge than was the case at, for example, Liverpool Street Station, with its range of cellaring; and this fact led to the provision of what was, literally, and not only by way of courtesy-title, a railway "dug-out."

The company's lines pass through London Bridge Station and so on to Cannon Street and Charing Cross Stations along a viaduct which, although but little higher than the booking offices at London Bridge, on the south, is somewhere about 40 feet above the level of Tooley Street, situate immediately alongside on the north. The lower range of what are really two series of arches forming this viaduct are used as traders' store-rooms, entered from Tooley Street; and here, at a point immediately underneath the High Level and Low Level Stations, and in what are suggestive of underground caverns rising to a height of about 20 ft., there was accommodation available for the sheltering in



"DUG-OUT" AT THE LONDON BRIDGE STATION OF THE SOUTH EASTERN AND CHATHAM RAILWAY COMPANY.

(A Passage was cut through about 20 ft. of concrete brickwork to afford access from the General Offices to Railway Arches on the Tooley Street level.)

perfect safety of from 300 to 400 persons. There were, however, no means of direct access to these arches from the stations. It thus became necessary to construct a broad and substantial wooden staircase rising to a point in the roof of the cellars from which a passage could be cut through the crown of the arch into the Low Level Station. The latter operation involved the cutting of an opening through about 20 ft. of solid concrete brickwork.

When this opening had been completed it was possible for the whole of the company's staff employed either in the General Offices or in the two stations to pass readily to arches so far subterranean that not even the sound of the big gun fired at the raiders from the Tower Bridge, only a few hundred yards away, could be heard in them.

At one end, and under what is really a third arch, there is a smaller arch, some 16 ft. by 10 ft.; and here it was that the company's military staff took up their quarters when the enemy aircraft reached the neighbourhood of London Bridge. From the military room in the General Offices extensions to this arch of six telephone wires, with the necessary appliances, were arranged, so that all could be switched on at a moment's notice and the important work done in that room continued under forty feet of concrete and brickwork in absolute safety and without risk of interruption. The wires afforded direct communication with the offices of the Railway Executive Committee, the Field-Marshal Commanding-in-Chief, Home Forces, and the War Office, in addition to connections with the ordinary Post Office telephone service and all parts of the South Eastern and Chatham system. The arch was, also, fitted up with the necessary office furniture, etc.

If, as repeatedly happened, the raiders met with such active opposition from the coast defences that they were unable to pass inland, business went on at London Bridge as usual; but, on the raiders crossing the coast, presumably on their way to London, the local representatives of the South Eastern and Chatham Railway telephoned the fact to the company's headquarters. Thereupon a warning was given, and when the raiders were approaching London all the staff who could be spared —and were so disposed—made their way to the arches, remaining there until danger was over. The number of those adopting this course was generally between 200 and 300.

The arches further became on all such occasions a first-aid station in charge of South Eastern and Chatham ambulance men. There was no need to make extensive provision for the treatment of injured, Guy's Hospital being within only a few minutes' walk; but everything necessary was kept available, and an ambulance staff always went at once on duty. Beyond, however, a few cases of fainting, no occasion arose for their services. No bombs at all fell on South Eastern and Chatham property nearer to London Bridge Station than Cannon Street and Spa Road (Bermondsey).

As regards the South Eastern and Chatham system in general, the occasions on which the railway was directly concerned in the raids were

the following; though it should be noted that the breaking of glass in station roofs may have been just as much due to shrapnel fired from anti-aircraft guns as to the direct action of the enemy :—

July 7th, 1917.—Five hundred squares of glass broken in the roof of Cannon Street Station. A bomb fell on permanent-way outside No. 2 Signal Cabin at Cannon Street, but failed to explode.

August 22nd, 1917.—At Ramsgate Town Station a bomb was dropped on the London end of the arrival platform, passing through the roof, which was considerably damaged. About 3,000 sq. ft. of covering was demolished, and boarding, slates and glass of the bay over Cab Road and the remainder of that over the arrival lines were so damaged that it was necessary to strip the two bays. A large hole was made in the platform where the bomb fell.

September 24th, 1917.—Bomb fell on the up line near Buckland Junction, Dover, breaking a rail.

September 29th–30th, 1917.—A bomb dropped within 300 yards of the Minster side of Sheerness East Station, on the Sheppey Light Railway, blew the rails out into an adjoining field. At Margate a bomb dropped on the line between the East and West Stations damaged a rail, broke several chairs and did other minor damage. At Woolwich Dockyard Station a bomb which fell on the line damaged forty or fifty feet of wall. Panes of glass were broken in the roofs of London stations.

October 31st, 1917.—At Erith a bomb dropped near a railway bridge blew down six lengths of fencing and damaged the brickwork of the bridge. Panes of glass broken in Charing Cross Station.

December 6th, 1917.—An incendiary bomb dropped on the roof of the engine shed in Sheerness Dockyard, causing it to burst into flames. These were extinguished by the staff without any serious damage being done. Another incendiary bomb was dropped through an empty carriage. This was as far as the raiders got on that occasion in the way of destroying the dockyard. They further managed to drop two bombs on the up platform at Whitstable, but neither exploded. Half a mile west of Herne Bay a chair was smashed and some sleepers were split on the down line. An incendiary bomb was dropped through the roof of the locomotive repair shop at Battersea. It failed to ignite, and the only damage done was the hole made in the roof itself.

January 28th, 1918.—As a train of empty carriages was leaving Cannon Street Station a shell struck a third-class coach, considerably damaging it.

January 29th, 1918.—Glass on the down platform roof of Margate West Station damaged.

May 19th, 1918.—A bomb fell close to the engine turntable in the Dover engine-shed yard, causing damage to glass in the buildings.

May 19th–20th, 1918.—Bomb dropped at Hither Green Station. One rail broken and several damaged, necessitating renewal. Both through roads were, also, slewed out of line. At Faversham Station a shell dropped on the roof, breaking the glass and burying itself in the up-platform.

On the night of May 19th, 1918, when a raid on London was threatened, a group of twenty South Eastern and Chatham ambulance men took on duty at Hither Green Station, in case their services should be required; and fortunate, indeed, it was that they were in attendance. The bomb which, as recorded above, fell on the line, may not have done much material damage, but other bombs fell on some houses immediately alongside the line, reduced several of them to ruins, killed a number of persons and seriously injured many more. Almost, how-

ever, before the bombs had ceased to fall, the ambulance men had rushed from the station and were actively engaged in effecting rescues and rendering such aid as they could before the arrival of the doctors who had hastened to the spot. One of the medical men attending, Dr. Summerskill, M.R.C.S., afterwards wrote :—

I was called out on the occasion of the raid on Sunday night and was struck by the efficient way in which the railway ambulance men performed their tasks under the dangerous and trying conditions existing outside Hither Green Station at the time. Although I went immediately after the bombs dropped, they were already in the open attending the killed and wounded, and, during the night, rendered inestimable service to the public.

Many enginemen had remarkable experiences in connection with the running of trains during air-raids. The following are among the incidents in this direction which occurred on the South Eastern and Chatham :—

On May 25th, 1917, the driver of the 4.30 p.m. express from Charing Cross observed, just after leaving Ashford, what he took to be a Zeppelin and a number of aeroplanes around it at a high altitude right ahead of the train. He slowed down, so as to avoid the emission of smoke from the engine and, also, with the idea of keeping behind the aircraft; but when he was approaching Smeeth, six bombs were dropped on the fields immediately alongside the line, and only 150 or 200 yards away from the train. He proceeded slowly to Smeeth and on to Sandling Station. While his train was standing there, he heard the explosion of a large number of bombs in the direction of Folkestone. He then went on into the tunnel and kept his train under cover a short time, until he thought the danger was over.

When, at about 11.20 p.m., on October 31st, 1917, a heavy train of Government stores was being hauled by two locomotives near Erith, a bomb was dropped on each side, just in front of the engines. A tree was blown down and the engines passed over some of the branches as they lay across the lines, but no damage whatever was done to the train.

London and North Western.

No special arrangements were made at Euston for the protection of the public during air-raids. That station is so situated as regards proximity to the "tubes" or other means of shelter that it was left to passengers, and, also, to the company's employees on the trains or on duty in the station, to adopt—on the warning being given—such measures as were already available; and this, in effect, was what they did.

As regarded the staff in the General Offices at Euston, the only members thereof who required to remain at their posts during air-raids were those employed at the telephone exchange and those concerned in the working of the special air-raid-defence system. All others were at liberty to retire at once to the basement of the station buildings, to the tubes, or elsewhere—the more so as the ordinary duties of the offices were generally suspended on these occasions. On the raids becoming more serious, the need for the telephone staff to remain in the exchange room when the raiders were actually over London was avoided by trans-

ferring a few of the most important circuits to a well-sheltered portion of the building, the ordinary telephonic work remaining meanwhile in abeyance. In the same way, and on like occasions, the welfare of the staff concerned in the special air-raid working, as well as the continuance without interruption of the important duties undertaken by them, was sought by the installation of telephones in various offices and positions where the work could be carried on with moderate security.

Although it was not considered necessary to allocate any portions of the station buildings at Euston as public shelters against the raiders, the company allowed their goods depôt at Queen's Park, N.W., the sub-basement of a warehouse at their Haydon Square, E., depôt and other suitable accommodation elsewhere to be so utilised.

So far as damage to railway property was concerned, the London and North Western record, while allowing for a comparatively few exceptions of a more serious type, is mainly one of broken glass and broken slates. Euston appears five times on the " damage " list ; but it was a matter of glass or slates on each occasion, while the breaking of sixty-five sheets of glass in the roofs on September 29th, 1917, is attributed to shrapnel from anti-aircraft guns—itself, probably, the cause of much more of the mischief done than it is credited with. In the raid of May 19th–20th, 1918, the station roof suffered to the extent of eighty-four broken squares of glass and sixty-two broken slates. Similar damage is reported, also, as regards the Haydon Square Depôt (seven occasions), Willesden (three occasions), Poplar Depôt (three occasions), Harlesden Station, and Queen's Park Station.

At the Camden Depôt on September 30th, 1917, a shell which broke six panes of glass in the roof and dropped into a wagon buried itself there in a bale of naval overcoats and was taken out still unexploded. Another fell on the ground, made a hole 8 ft. deep, but did not explode. On January 28th, 1918, the nose of a shell passed through the slates of the new warehouse at Camden and embedded itself in a bale of clothing. An incendiary bomb which fell in Worship Street Goods Yard on December 6th, 1917, burned itself out, doing practically no damage. At North Pole Junction a shell dropped on the down West London line, displacing some ballast and slightly damaging two conductor rails ; at Olympia a shell buried itself in the pavement of the L. & N.W.R. private roadway, and at Acton Station the nose of a shell pierced the roof of the verandah and was found lying on the platform.

The mischief done by a bomb which fell and exploded between the up and down fast lines at Queen's Park on September 29th, 1917, included the following items :—Two sleepers and two chairs broken ; sheet-iron casing to high-tension cables on adjoining retaining wall pierced in seventy-nine places ; wooden casing to telegraph and telephone cables pierced in thirty places, the wires being badly damaged, and the casing to high-tension cables on Salusbury Road bridge struck in eight places, the metal casing being pierced in three instances.

This incident, together with one that occurred on the Hampstead

Junction Line in May, 1918, when a bomb broke four chairs and damaged the running-rail, may have caused a certain amount of temporary inconvenience; but, apart from the cost of repairing the damage done to stations and buildings, any serious interruption of traffic on the North Western lines in and around London as the result of all the bomb-dropping must, it will be seen, have been positively *nil*.

So far, also, as concerns the London and North Western system in general, the number of air-raid incidents officially reported as having affected the company's property elsewhere than within the Metropolitan area did not exceed a dozen. One of the worst of these, in the matter of material damage, occurred at Wednesbury, Staffordshire, on January 31st, 1916. The permanent-way, a retaining wall, a platelayers' cabin, a goods shed, a weighing machine and the signal-work on the line were all more or less damaged; but inasmuch as seven bombs had been dropped, four of them falling on the company's ground and three in the immediate vicinity, there was reason for satisfaction that the results were no worse.

On the same occasion, and in the same locality, two bombs were dropped on the lines of the London and North Western at Tipton, one of them damaging permanent-way and signal-work while the other made a hole in an embankment, damaged signal and telegraph wires, and did other things which could be easily remedied. At Derby the raiders dropped a bomb which broke one 30-ft. rail, twelve chairs and two sleepers on the down line leading to a goods yard, and at Burton they knocked down about 30 feet of a boundary wall which, though not owned by the North Western, fell in part on their property and was reported accordingly.

At Northampton, on October 19th, 1917, twelve bombs were dropped on or in the neighbourhood of the company's lines, seven of them—one explosive and six incendiary—falling between the railway fences. Properly speaking, perhaps, the railway should, with the use of so many bombs, have been hopelessly wrecked; but all that happened to it was "Post and rail fencing in one place damaged for about 25 yards." Unfortunately an incendiary bomb fell on one of the company's houses in Park Street, killing the wife of a bricklayer in the North Western service and injuring two children, one of them fatally.

The same raiders also passed over Bedford and did their best to smash up the North Western lines there. They dropped four bombs in the vicinity of the railway, but all that happened thereto was that a length of about ten yards of quick-fence alongside was damaged.

North London Railway.

There were nine raids on London in which Broad Street Station, its goods depôt, or its adjoining warehouses, suffered in the way, mainly, of broken glass in roofs or windows. The worst occasion of all was on September 8th, 1915, when the number of panes of glass, large and small

(among the large being twenty-five plate-glass windows), which were broken in the station buildings, in the shops forming part of those buildings, in the railway offices, signal cabins, etc., reached a total of no fewer than 1,100. In addition to this wholesale window-smashing, a portion of an enclosed wall was blown in; the end enclosure of four arches adjoining Worship Street was damaged; a water-main was broken and fourteen horses were more or less injured. Damage to glass, slate or zinc roofs of station, goods depôt or other buildings was done at Poplar (five occasions), Camden Town, Haggerston, Dalston, Canonbury, South Bromley and elsewhere.

A raid which had especially bad results for the North London Railway occurred on the night of September 23rd–24th, 1916. Four bombs were dropped by a Zeppelin between Bow and Bromley Stations, and their effects were far-reaching. The connections leading from the North London lines into the London and North Western Railway Company's Devons Road goods depôt were destroyed, and in their place there was left a crater 8 ft. in depth and 15 ft. in diameter. The slates, glass and window-frames of the carriage-shed on the opposite side of the running lines were damaged for the whole length of the building. Part of the permanent-way at the entrance of the engine-sheds was destroyed, and various buildings alongside were damaged. The connections with the carriage-shed were destroyed and a portion of the Back Road adjoining the new foundry was torn up. One piece of rail, nearly 8 ft. long, blown out of the track, was found 300 yards away, and another piece, 3 ft. long, was blown a distance of 500 yards. Some 40 ft. of a side wall of the foundry was demolished and much other damage was done to the buildings. This, however, was not all. Seven North London passenger coaches, forming an empty train, and standing on the shunting road, were wrecked beyond any possible hope of repair. Gas from the holder in the front van set the brake on fire, though the fire was prevented from spreading. Slight damage was done to other passenger vehicles. The driver, fireman and guard of the empty passenger train were injured and had to be taken to the Poplar Infirmary. Another fireman, who was at work near the engine-shed, was blown into a pit and fractured his knee-cap.

Altogether this would seem to have been a pretty bad bit of business for the North London Railway. Only slight damage, however, had been done to the running-lines, and this was speedily made good. The effects of an apparent disaster, occurring on a Saturday night, were, in fact, so far overcome on the following day that the usual train services could be run on the Monday.

Another eventful raid for the North London Railway occurred on October 1st, 1917. The sections of line specially affected on that occasion were those between Shoreditch and Haggerston Stations. Adjoining the Dunloe Street signal cabin, one 60-ft. rail was badly bent and another was cut in two. One of the pieces—a length of about 4 ft.—was blown away and was found at a spot 247 yards distant. On the No. 2 down line the positive and negative conductor-rails were lifted from the insulators and

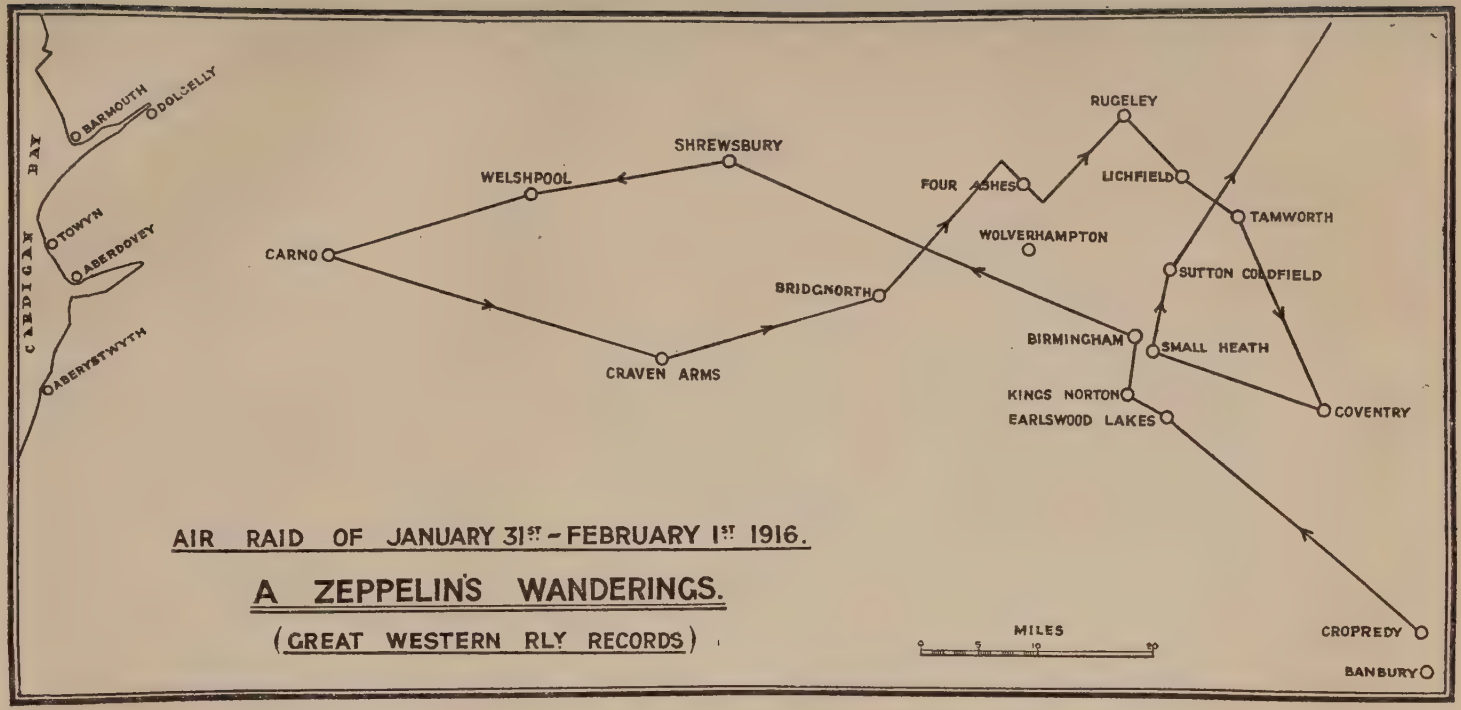
deposited near the running rails. Seven positive and eleven negative insulators each had one of the cast-iron clips broken off. At other parts of the section of line mentioned, the boundary walls in front of a number of the railway arches were partly demolished, and other damage was done.

The district served by the North London was thus the scene of much air-raid activity, and great anxiety was shown on the part of the local population to take advantage of such shelter as the railway premises might afford. On the occasion of the first raid on London, crowds rushed into the station at Dalston in such numbers that they overpowered the station staff and police had to be called in to maintain order, to protect the people from the danger of the running-lines, and to advise them as to other and more suitable accommodation in the neighbourhood. Elsewhere it was found possible, subsequently, to provide a number of public shelters on North London Railway property. At Shoreditch goods yard, for instance, accommodation was made available for over 1,000 persons, and the measures taken to regulate the crowds were a complete success. Among other places where accommodation was afforded were Bow passenger station (four arches), Broad Street (cellars and arches), Haggerston (booking hall, arch, etc.), and Poplar (basement under warehouse). Provision was also made for sheltering the railway staff in basements or cellars of goods warehouses and other buildings approved by the company's engineers, the accommodation available being so allotted that each member of the staff knew where he or she should go in case of need. Members of the staff trained in ambulance work were in attendance at the larger of the shelters whenever a raid occurred.

The Great Western.

In addition to adopting, in the earliest days of the war, the measures in regard to restricted lighting, etc., recommended by the Admiralty and the police authorities of London, the Great Western Railway Company, as a further precaution against possible air-raids, prepared a code of instructions to be followed by the staff immediately on information being received that an aerial attack might be expected. When, subsequently, the raiders became active, girls and women working in upper rooms in the General Offices at Paddington were either brought down into lower rooms or else sent to the subways, tubes and underground lines which connect with the Great Western terminus and rendered unnecessary there the provision of any special "dug-out." A room on a lower floor of the General Offices on which the company's "military staff" were already located was fitted up with a duplicate set of telegraphic and telephonic instruments in order that, when a raid was on, essential work could be continued there by the operators instead of on the top floor of the building, where they would have no more than a glass roof over their heads. Two emergency exits for the staff were also provided.

Whenever a raid was expected, or thought possible, at night, a member



AIR RAID OF JANUARY 31ST – FEBRUARY 1ST 1916.

A ZEPPELIN'S WANDERINGS.

(GREAT WESTERN RLY RECORDS)

of the Electrical Department staff took on special duty in order that, as soon as an official warning was received, the arc lamps in Paddington Station and the adjoining railway yards should be turned out, emergency glow lamps and, also, oil lamps on the station platforms being substituted for them. Passengers arriving or going by train were induced to take cover in the waiting rooms or in the "tubes," and the departure of trains due to leave was delayed until the raid was over. The main reason, however, for keeping passengers off the platforms was to shelter them from falling glass, considerable damage being done to the station roof by shrapnel fired at the raiders by our own guns.

It was, indeed, from this cause only that any damage was done at all, so far as the company's London terminus was concerned. Paddington Station is situate so far to the west of London that it escaped the attentions paid more conveniently by the raiders, in their attempts on London railway stations in general, to termini in the East, the East Central and the Central districts. Bombs were, however, dropped in the vicinity of Paddington. The nearest was one that fell in Warrington Crescent, Maida Vale, about three-quarters of a mile away.

The most notable air-raid experience of the Great Western Railway Company was in connection with the Zeppelin raid on the Midland Counties on the night of January 31st–February 1st, 1916. News of the arrival of the raiders was received at Paddington at 5.13 p.m., and somewhat later it became evident that their immediate objective was the Midland Counties. Arrangements were accordingly made throughout the company's Birmingham district to meet the emergency, the train service being suspended and lights extinguished for several hours. Judging from the messages received, four Zeppelins passed over the Birmingham and Wolverhampton districts, though one of them got much farther to the west. First "picked up" by the Great Western staff about 9.30 p.m. at Cropredy, a station three and a half miles N.W. of Banbury, it continued in an almost direct line to Birmingham and so on to Shrewsbury (10.10 p.m.). Passing over or near to Welshpool, it reached the western limit of its wanderings at Carno, a station on the Cambrian Railway about twenty-five miles due east of Aberdovey, on Cardigan Bay. There it turned to the south-east and, on reaching Craven Arms (11 p.m.), turned again, this time to the north-east. It now visited Bridgnorth and, save for a slight deviation at Four Ashes, kept straight on as far as Rugeley, Staffordshire. The timing there was 11.35 p.m. Making a diversion in the direction of Lichfield, the raider went south to Coventry, then turned westwards for a short distance, and, from Small Heath, near Birmingham, went northwards, viâ Sutton Coldfield (12.15 a.m.). Passing equidistant between Lichfield and Tamworth, it continued in the direction of Derby, and so got beyond the range of the Great Western observers.

The record thus kept offers, perhaps, one of the best examples of the way in which, owing to the weakness of our defences at the period in question, it was then possible for Zeppelins to wander over England

where they would, in any direction they pleased; though the time was to come when they could do this no longer, and the possibility of their repeating such a journey as the one here described was thenceforward denied to them.

Of the three other Zeppelins mentioned, one, first seen by Great Western men at Stourbridge at 12.18 a.m., followed a very erratic course, visiting successively Rowley Regis, Oldbury, Dudley, Bilston, Wolverhampton, Willenhall, and West Bromwich, at which point it was lost sight of.

Considerable damage was done by the raiders in different parts of the country on this occasion. They dropped over 350 bombs, and the casualties comprised seventy killed and 112 wounded; yet, although the raiders passed so repeatedly over the Great Western system, the damage they did thereto amounted to no more than causing a small and readily-extinguished fire at the Dudley goods shed. What is still more remarkable is the fact that this was the only instance of damage being done to Great Western property by enemy air-raiders throughout the entire period of the war.

London and South Western.

Waterloo Station had a narrow escape from what might have been a serious experience in the aeroplane raid made on London on the night of September 29th, 1917, when two bombs were dropped on the permanent-way. One of these fell on No. 6 siding, on the north of the station, and the other fell on the down main line between the "A" signal box and Westminster Bridge Road. They caused large cavities in the railway track; several rails, chairs and sleepers were damaged; one fragment of rail, weighing about 40 lbs., was blown right over the station and was picked up, about 700 yards away, on the South Eastern Railway; another fragment was found close to Kennington Police Station, about 420 yards distant; nine goods trucks and twelve empty passenger coaches on the north siding were badly damaged; the steel trough flooring over the approach from Westminster Bridge Road was damaged, necessitating the provision of a temporary wooden trestle underneath, and a large quantity of glass was broken in the "A" signal box and on the north side of the station roof. So far, however, as interference with traffic was concerned, the results were of no material importance. The damage done to the permanent-way was speedily made good, and the lines affected were ready for traffic within sixteen hours.

Waterloo Station suffered again in the air-raids on London of February 16th, 17th and 18th, 1918; but on these occasions the damage was caused by fragments of shrapnel from shells fired by the anti-aircraft guns. It amounted to no more than a breaking of glass in the station roof to the extent of fifty squares on the first night, 110 on the second night, and six on the third night.

One or two other parts of the London and South Western system were also affected by the raids.

At 10 p.m. on the night of October 13th, 1915, a Zeppelin passing over the London area dropped a bomb on the South Western lines between the two tunnels south of Guildford Station, the results being as follows: Four rails damaged; fogging hut damaged; Shalford down signals damaged; signal wires and cable for electric-signal repeaters severed; cable containing all L. & S.W. Railway telegraph wires completely severed at one point and damaged in two other places, and South Eastern Company's wires on the up-line side broken. The repairs were at once taken in hand, but it was not necessary to stop the traffic over the spot. The damaged rails were replaced the following day. Examination showed that no harm had been done to the structure of either bridges or tunnels.

Another experience which caused a certain amount of trouble was due to the dropping, in the aeroplane raid of January 29th, 1918, of three bombs near to the company's Kew Bridge Station.

One of the bombs fell within a few feet of a railway bridge close to the station buildings; and this was the one that did the most mischief. A portion of the parapet wall of the bridge was demolished and the south-west wing of the same bridge was badly shattered. Two mains of the Metropolitan Water Board were fractured, with somewhat alarming results. The escaping water scoured the roadway and quickly flooded the railway. The tracks between Chiswick Junction and the Brentford end of Kew Bridge Station were submerged, and the debris from the scour was washed on to the railway, blocking both lines. An electric train standing at the east end of the platform on the down-line was, in places, buried up to axle level, but very little damage was done to the train. The station buildings themselves fared rather badly. The windows and doors of the main block, adjoining the bridge, comprising booking office, goods office and station apartments, were blown in; ceilings were cracked; blinds and curtains were destroyed; bedroom furniture was damaged, and the whole place was shaken. In addition to this, all the glass of the footbridge was broken and the staircase leading to the down platform was blown out.

The second bomb, though falling near to another of the railway bridges, did no material damage to it. The third bomb, falling on the railway lines, severed the high-tension cable at two points, fractured a pair of 87-lb. rails and five sleepers, forced the up-line slightly out of alignment, and broke eight telegraph wires. The repair of the damage necessitated the stoppage of rail traffic for several hours during the following day.

Apart from the comparatively slight amount of material damage due to the bombs dropped by enemy aircraft, there was another direction in which Waterloo Station was very much concerned in the raids.

The London terminus of the South Western Company's system extends over an area of about 118,580 yards, and practically the whole of the station is built on arches, which, in combination with a series of subways—and even of sub-subways—serving underground lines, afforded a group of air-raid shelters not surpassed in extent by any other railway station

Waterloo Station Ambulance Corps Assembled for Anti-air-raid Duty.

Girl Workers at Waterloo (L. & S.W. Railway) Safe in an Archway under the Station.

[*To face p.* 450.

Under the Railway Arches at Nine Elms (L. & S.W. Railway).

His Own Particular (Nine Elms).

[To face p. 451.

within the Metropolitan area. The total length of subterranean passages under Waterloo Station is, approximately, 1,500 yards; and, while the Waterloo and City Station is already 39 ft. below the level of Waterloo, a greater depth still is attained by the station of the Bakerloo Railway, this being no less than 84 ft. below the South Western main lines.

People living in the neighbourhood of Waterloo—and especially those of foreign extraction—were not long in discovering that these were ideal conditions for sheltering from the raiders; and they speedily began to take advantage of them whenever the occasion arose, encouraged thereto by a notice displayed on the station premises to the following effect :—

LONDON AND SOUTH WESTERN RAILWAY.

Whilst certain arches and subways on the Company's premises will be available and open for such shelter as they may afford, it must be clearly understood that the public make use of the same at their own risk and that the Railway Company will not be responsible for any injury, damage or loss that may be sustained by persons using the premises as a shelter during air raids.

BY ORDER.

5-10-1917.

There was accommodation available for thousands of people at a time; and it was in their thousands that people collected whenever an air-raid alarm was given. They went in complete families from the neighbouring tenements and dwellings, and they soon acquired the art of making their stay in the said passages—often extending over several hours—as comfortable as circumstances would permit, and especially so in the interests of their sick, whom they took with them. They provided themselves, for example, not alone with portable chairs, but with mattresses and pillows and supplies of coats or cloaks which would serve for covering.

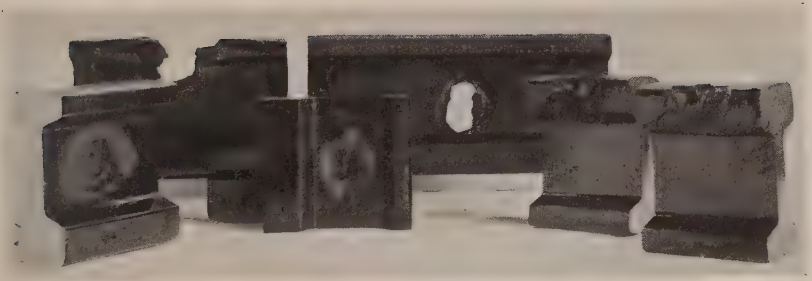
Then, again, whenever the warning of an air-raid was given, passengers seated in outgoing trains, or arriving at Waterloo by incoming

trains, were sent into the arches and subways to stay there until the danger was over, the work of the station being meanwhile suspended. Measures were also taken to ensure the safety of the staff. A number of women and girls were employed thereon, and some of them worked in the topmost rooms of the station buildings. On the Military Section of the Superintendent of the Line's department receiving the first warning of the approach of enemy aircraft, the news was circulated among the different departments, and all the women and girls except those on the telegraph and telephone staff were at once sent to an arch underneath the station which had been specially allocated to their use. The remainder continued at work until the Military Section gave another warning. Thereupon other members of the staff sought shelter in the arches. When, at last, the defence guns on London Bridge began to fire on the raiders—then presumably overhead—the Military Section at Waterloo switched on their telephone and telegraph wires to extensions arranged in an arch specially reserved for the purpose and themselves retired thereto, their work in receiving and dispatching air-raid messages being then continued as before.

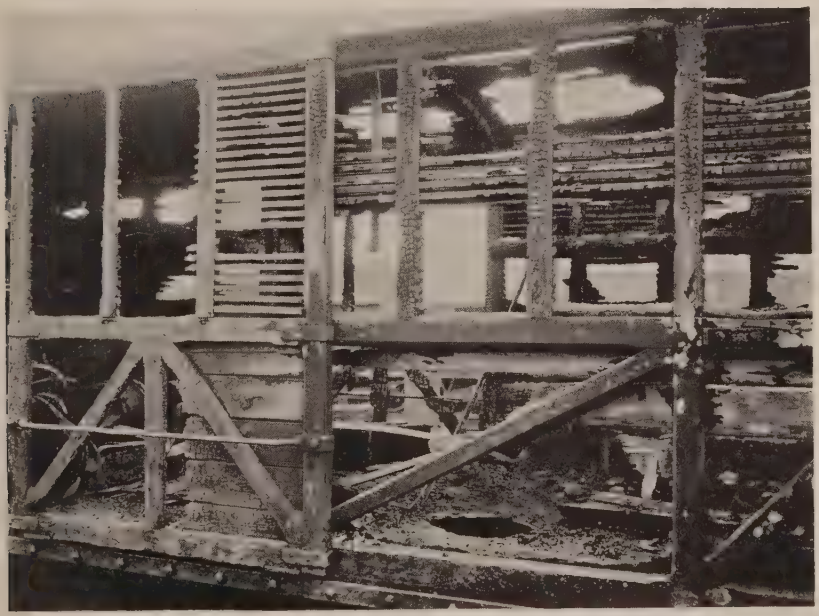
Under these various conditions it was found expedient to make provision for dealing with cases of accident or illness that might occur, and in September, 1915, a section of a new subway, leading from the Bakerloo to the Waterloo and City line, was converted into a First-aid Station, fitted and furnished with every appliance that might be required, and capable of accommodating up to 100 sick or injured at one and the same time. The whole of the work was undertaken by members of the Waterloo Ambulance Corps, consisting of specially-trained members of the company's staff who mostly took on duty in their leisure time, doing so without any assistance from outside detachments. They worked in three sections patrolling, in pairs, Waterloo, the Waterloo and City and the Underground (Bakerloo) stations and passages respectively. They carried electric torches or hurricane lamps as they moved about looking out for those who might need their help, the arches being kept in darkness where there was any risk of the electric light being seen from the streets.

Much need, too, there was for the services thus rendered. Waterloo Station and its subways were between the London Bridge and the Kennington barrages, and when the bombs were bursting and the home-defence guns were in full action the noise was terrific, while the combination therewith of the atmospheric and other conditions of the crowded passages was sufficient to upset almost the strongest of nerves.

Apart from ordinary cases of fainting—so numerous every night that no count could be kept of them—the number of serious cases dealt with by South Western ambulance staff during the air-raid period was no fewer than 298. By serious cases is meant cases of shock, prostration, collapse, hysteria and epileptic fits; cases of shrapnel wounds on persons who had gone into the street to see the firing; cases of concussion of the brain due to falls when hurrying along the passages, and cases even of premature births under panic-stricken conditions, the mothers being



Track Rails Damaged by Bombs Dropped from Enemy Zeppelin between the two Tunnels at Guildford (L. & S.W. Rly.), October 13th, 1915.



All that an Incendiary Bomb Left of a Fish Truck.

[To face p. 452.

Shunting-box at Streatham Common Station (L.B. & S.C. Rly.), destroyed in Air-raid of September 23rd–24th, 1916.

Grosvenor Road Railway Bridge, Crossing the Thames, set on Fire by Shell from Anti-aircraft Gun, October 1st, 1917.

[*To face p.* 453.

hurried off on stretchers to St. Thomas's Hospital while bombs were still dropping in the streets. Many, in fact, of the serious cases which called for hospital treatment were so removed after the giving of first-aid attention in respect to which the staff received cordial commendation from the hospital authorities. The St. John Ambulance Association also recognised the services rendered by members of the company's staff, among whom a number of War Service badges were distributed.

At the Nine Elms Station, where about 1,000 persons are employed, there was a similar organisation for the protection of the staff and the rendering of such first-aid as might be needed, advantage being taken there of the arches under the viaduct along which the main lines of the South Western system are conducted into Waterloo Station.

London, Brighton and South Coast.

In the basements of the L.B. & S.C.Rly. General Offices at the company's London Bridge terminus there are commodious cellars which are not only below the level of the adjoining approach but are surmounted by a building of several storeys provided with substantial floors of stone. Then, from the adjoining terminus there is a subway extending a distance of about 600 feet to the London Bridge Station of the City and South London Company's (underground) railway in order to allow of an interchange of traffic between the two systems. When, therefore, the enemy air-raiders began their visits to London efficient protection for the Brighton Company's staff at their General Offices was already available.

The need for such protection became especially marked in respect to the Military Staff. The members thereof occupied a room at the top of the General Offices, and it was deemed expedient, both in their own interests and in order to assure the continuance of their responsible duties, that they should have a supplementary office in one of the cellars where all necessary telegraphic and telephonic wires, apparatus and appliances would be duplicated, so that the receipt and dispatch of air-raid messages and of others concerning the operation of the lines could be continued without risk of interruption.

When the raiders began to make their daylight visits to London, special measures were taken to ensure the safety of the considerable proportion of women and girls then on the headquarters staff at London Bridge. Immediately the warning of a probable raid was received by the Military Staff, a signal was given and the women and girls were required at once to leave their work in the General Offices and take shelter. This they did, at first, in the basement; but subsequently they were sent to the subway under charge of a male member of the staff who had instructions that on no account were they to leave the subway until all danger had passed.

On the raiders getting near to London, a further warning was given in order that those of the male staff who wished to take shelter either in the basement or in the subway could do so; but most of them went

no farther than the corridors, thinking that the stone flooring of the storey or storeys above them would be sufficient protection. The members of the Military Staff remained in their upper room until the raiders got within the London area, whereupon they retired to the basement.

The precautionary measures adopted went much further, however, than the taking of "cover." Immediately a first warning was given, members of the company's male staff who had qualified in first-aid took on duty at two ambulance stations for which, with all necessary equipment, provision had been made in the General Offices; others who formed a Volunteer Fire Brigade assembled in uniform and stood by their fire-extinguishing appliances, ready for immediate action in case of need; a number of men on the Engineer's staff reported for duty in the event of their services being wanted, and certain members of the general staff who had been sworn in as special constables came forward, wearing their armlets, and, under the direction of the company's Police Superintendent, undertook the regulation of the traffic in and around the station. They also patrolled the aforementioned subway, to which railway passengers, people from the streets or families resident in the neighbourhood often flocked in such numbers when raids were on that it was packed from end to end.

Anti-air-raid precautions based on the London Bridge standard, though varying according to local conditions, were also taken by the company at their Victoria Station, at New Cross and at Brighton.

No damage whatever was done by the raiders at London Bridge Station, and the confidence of those of the male staff in the General Offices who disdained to join the crowd in the 600 feet of subway, and contented themselves with the stone-paved corridors, was found to have been warranted. At Victoria a shell case, probably fired by one of our own guns, fell through the station roof and made a hole on the track. Much glass was broken from time to time by shrapnel, also from the anti-air-raid defences. More serious were the results of an anti-aircraft shell which, fired at the enemy on the occasion of the aeroplane raid of October 1st, 1917, fell on the company's Grosvenor Road bridge, by means of which trains cross the Thames at Battersea and gain access to Victoria Station. Three 21-in. gas-mains carried across the bridge and underneath the ticket-collecting platform thereon were fractured, a huge quantity of gas escaped, exploded, and blazed furiously for some time, and about 100 feet of the bridge was damaged, though repairs were speedily effected.

The company's Streatham Common Station fared badly from one incendiary and three explosive bombs dropped either on the railway or in the immediate neighbourhood when the Zeppelins raided London on the night of September 23rd–24th, 1916. A shunting-box (used only when shunting was being done) was wrecked; but, inasmuch as it was then unoccupied, no casualties occurred. Damage was done to about 45 feet of permanent-way, to three trucks and their contents, and

to the roofs and glass of the station and adjoining buildings. The company's Streatham Hill Station (on another line) also suffered in the same raid, a building used as booking office, cloak-room and waiting-room being badly damaged by an explosive bomb which fell upon and completely wrecked a private school in the immediate neighbourhood.

During the aeroplane raid of September 25th, 1917, an incendiary bomb, dropped on the Brighton Company's lines at New Cross, fell through the roof of a "shunters' lobby"—otherwise a cabin where shunters have their meals, etc. Three men were in the structure at the time, and one of them threw a bucket of water over the bomb before, apart from the hole in the roof, it had done more harm than burn another hole in the floor.

On December 6th, 1917, when an aeroplane raid was made on Kent, Essex and London, the driver of the South Eastern and Chatham 4.50 a.m. train from Cannon Street to Tonbridge, which passed over the Brighton company's lines between Sydenham and Forest Hill, saw two incendiary bombs drop and burst into flames on the line just in front of his train. He stopped the engine and, with the help of the guard, extinguished the flames before any damage was done. The bombs were then picked up and taken on to the District Superintendent's office at Croydon.

No damage at all was done by the raiders to the Brighton company's property outside the London area, and it will be seen that what was done within that area, whether by the raiders themselves or by the anti-air-raid defences, was of no real importance from a traffic point of view.

The Midland Railway.

The information available in respect to the Midland is especially interesting inasmuch as it shows, in separate columns, not only date of raid and locality, but whether the damage caused was done to (1) running-line, (2) signals and / or telegraphs, or (3) to other property belonging to the company, while in each instance there is given, also, the approximate time taken to carry out repairs. It is thus easy to distinguish between damage that may have directly affected the working of the traffic and that done to buildings, etc., without causing traffic delay.

One might well expect to find the Midland record a bad one, since the company's system includes the London, Tilbury and Southend Section which, located on the north bank of the Thames, between the Great Eastern lines in Essex and the South Eastern and Chatham lines in Kent, must have been frequently passed over by the raiders when they were making their way to London by the Thames estuary. The Midland also had the risk of suffering alike through the raids on London and through those on various towns in the Midland Counties where the company have lines and property on so considerable a scale; though here, in each instance, and as will be shown later on, the classification mentioned above is especially important as distinguishing between damage which—

from a traffic point of view—really mattered, and that which, however serious otherwise, did not. It will be found, indeed, that in respect to the former the Midland came through the ordeal very well indeed.

We may, in the first instance, take the various examples of damage done to permanent-way, signals and telegraphs as instances in which interruption of or interference with traffic may have been either caused or endangered.

The Tilbury and Southend Section of the Midland was the first railway in this country to receive the attention of the raiders, who, on the occasion of their second visit, by aeroplane, on December 25th, 1914, dropped a bomb on the lines between Low Street and Stanford-le-Hope Stations, situate on the Tilbury and Pitsea branch of the said section. The consequences of this initial effort to carry out what was to develop into a determined attempt to wreck the British railway system are thus described in the Midland records: "Sleeper slightly split." In the airship raid of May 10th, 1915, an incendiary bomb was dropped on the line between Leigh and Southend, though again with trivial results—"Two sleepers scorched." Later examples of damage done and the time taken on repairs may be summarised thus :—

January 31st, 1916.—Bennerley Junction (Ilkeston, Derbyshire). Bomb fell, smashing two crossings, set of points, several rails, timbers, etc. Considerable damage done to signal box. Telegraph and telephone wires down. Permanent way repairs completed in six hours and a half. Other damage sufficiently repaired, and communications restored, to allow of ordinary working being resumed eighteen hours after the dropping of the bomb.

January 31st, 1916.—South of Trowell (Notts). Bomb fell, breaking three rails and two sleepers. Telegraph and telephone wires broken. Permanent-way repairs completed in five hours. All communications restored within eighteen hours.

January 31st, 1916.—Burton-on-Trent (Staffordshire). Bomb fell near sleeper ends on up goods line at the south end of station platform, slightly damaging permanent-way. Several panes of glass broken in four signal boxes and some rodding and signal wires damaged. Large number of telegraph and telephone wires destroyed; others thrown down. Repairs to permanent-way completed in a few hours. Telegraph and telephone communications restored by afternoon of next day. (See later for damage done to "other property" on the same occasion.)

January 31st–February 1st, 1916 (midnight).—Derby. Siding at Osmaston Road damaged, preventing the working of trains into London Road Wharf. Several panes of glass broken in three signal boxes. Number of telegraph wires broken; others down. All repairs to permanent-way and signal boxes completed February 1st. All telegraphic communication restored by February 2nd. (See later for damage to "other property.")

April 1st, 1916.—Rainham (Essex). Nine railway wires and twenty-one Post Office wires broken by bomb which made hole in marsh just outside boundary fence. Communications restored by 1 p.m. same day.

April 25th, 1916.—Upney (near Barking, E.). Five wires broken. Communications restored next day.

September 23rd, 1916.—Bromley, E. Number of wires broken. Slight damage to telegraph pole and arm. All communications restored between 5.15 a.m. and 1 p.m. same day.

September 23rd, 1916.—Nottingham. Eight sheets of plate glass in front of signal box shattered by explosion of bomb dropped fifty yards south of London

Road signal box. Four wires broken down and tower clock damaged. Signal box repaired soon afterwards. Wires restored next day. Clock, September 25th.

September 24th, 1916.—Campbell Road Junction (London). Several wires broken by explosion of bomb dropped on the North London Railway. Repairs carried out soon afterwards.

October 1st–2nd, 1916.—Weldon and Corby (Northamptonshire). Several trunk telephone wires and railway wires broken. Communications restored in a few hours.

June 13th, 1917.—Abbey Mills (London). Conduit for cable route broken. Repaired next day.

August 12th, 1917.—Southend. Sleeper broken by bomb, rail bent, and four chairs broken (repairs done in two hours). A few point rods and signal wires, two panes of glass and a green glass in signal damaged by explosion of bomb (repairs done in a short time). Two Post Office trunk circuits and one railway wire broken. Twenty feet of boxing, containing five wires, broken. (Communications restored by 9.10 p.m.)

August 12th, 1917.—Westcliff-on-Sea (Essex). Shell fell in 4-ft. way, breaking chair and piercing sleepers. Point rod pierced. Damage repaired in half an hour.

September 24th, 1917.—Barking, E. Two railway wires broken. Communications restored 10.45 p.m.

September 30th, 1917.—Plaistow, E. Several panes of glass broken in signal box; four ground signal-lamps destroyed, and some rodding and signal wires broken or damaged by explosion of bomb. Repairs carried out soon afterwards.

September 30th, 1917.—Abbey Mills Lower Junction (London). Large number of Post Office trunk wires and railway wires broken. Test-box slightly damaged. Up-siding signal box badly damaged. Communications restored prior to commencement of traffic next morning.

October 19th, 1917.—Bedford. No damage, but quantity of earth thrown on line by explosion of bomb in adjoining field. Cleared in about an hour.

December 18th, 1917.—Little Ilford (Essex). Unexploded shell at West end of sidings damaged sleeper and chair. Repaired in half an hour.

January 30th, 1918.—Hornchurch (Essex). Telegraph pole broken. Replaced same day.

The foregoing list, save for some other cases of broken wires, of a type similar to those mentioned, gives practically all the instances of damage caused on the Midland Railway, including the London, Tilbury and Southend Section, in which the working of the traffic was in any way directly concerned.

As regards what was done to the company's property other than running-lines, railway structures and telegraphic and telephonic communications, the most serious incident was the one that occurred on the night of February 17th, 1918, when five bombs, one of which failed to explode, were dropped by enemy aeroplanes upon or in the vicinity of St. Pancras Station, London, and the adjoining Midland Grand Hotel, owned by the Midland Company. The positions in which the bombs fell were approximately as follows: (1) About the centre of the lower road of the terrace in front of the hotel; (2) on the higher road of the terrace, near to the carriage entrance under the hotel and leading to the booking hall; (3) on the main tower of the hotel over the carriage entrance leading to the booking hall; (4) in the covered carriage approach opposite to one of the booking-hall doors, and (5) in Midland Road, near the S.E. corner of Somers Town Goods Warehouse. No fewer than twenty persons were killed (including

eight of the Midland Railway Company's employees), and thirty-three persons were injured. All had taken shelter in or about the carriage entrance leading to the booking hall. Considerable damage was done to the hotel. Two of the turrets at the angles of the east side of the main tower over the entrance archway to the booking-hall approach were thrown down to roof level. The debris therefrom and from other portions of the roof did a great deal of damage internally and externally. In addition to this, most of the windows in the front of the hotel facing Euston Road were broken, and a number of doors were either wrenched off their hinges or otherwise damaged. At Somers Town, paving stones over an area of 20 ft. by 10 ft. were broken, and the goods warehouse and surrounding property were damaged by the explosion.

It is quite possible, if not highly probable, that the dropping of these five bombs so close to the London terminus of the Midland Railway Company was due to a deliberate attempt to wreck the station, counting among other various efforts of a similar kind in London; but, if this were the case, the intentions of the raiders once more miscarried, the traffic in and out of St. Pancras being in no way interrupted.

A certain amount of miscellaneous Midland property at Burton-on-Trent was involved in the airship raid on the Midland Counties on January 31st, 1916, when, as we have seen, damage of only a comparatively trivial nature was done to the permanent-way. A large portion of the front wall and roof of the goods shed was damaged; three large sliding doors and the whole of the windows in the goods offices were wrecked, and the roof of those offices was damaged. At No. 2 Grain Warehouse six windows were entirely and two were partly destroyed. The coal-wharf stables were much damaged, and so, too, was an engine-shed occupied by the North Staffordshire Railway Company. Most of the glass in the passenger station was broken.

In the airship raid made on West Suffolk and the Midland Counties on the night of January 31st–February 1st, 1916, the raiders would seem to have done their best to wreck the various buildings connected with the Midland Company's headquarters at Derby. Portions of the roofs of two shops in the Carriage and Wagon Works were destroyed; several wagons and coaches were damaged; some doors and windows were blown in; a quantity of glass was broken, and part of a gable wall was thrown down. In the Chief Mechanical Engineer's works the roof of one of the engine-sheds was practically destroyed, all the windows were wrecked, and portions of the walls were knocked out of plumb. One of the pattern shops had the roof badly damaged; two-thirds of the slating and glass in the roof of a boiler shop were destroyed, and considerable damage was done to the glass and slating of some other shops alongside. Various buildings near to where the bombs dropped had their doors and windows smashed; much glass was broken in the windows of the Goods, Telegraph and Accountant's offices, as well as in the passenger station; a siding which leads to a locomotive shed suffered, and, finally, three water-mains were burst.

The time taken in carrying out the necessary repairs or reconstruction in this and the other instances here in question is given in the company's detailed report ; but the bare statement as to the number of days, weeks, or even months which elapsed before the work was completed would be misleading inasmuch as restoration of the buildings, etc., affected was in certain cases held over to a convenient season, since the damage done caused comparatively little inconvenience to the operations of the company. The important consideration is that, notwithstanding the extent of the mischief caused at Derby, that which might, possibly, have affected the working of the traffic—although it did not necessarily do so—was all made good within two days. We have here, perhaps, the most remarkable example of all of the limitation of the powers possessed by the raiders to interfere seriously with really vital parts of the British railway machine, whatever they might succeed in doing in other directions.

In the raid on Nottingham, September 23rd, 1916, the damage already recorded as having been done to signal boxes and wires was supplemented by other damage to the goods depôt and the passenger station. Then, in the raid on Plaistow, E., September 30th, 1917, a bomb which fell through the roof of the running-sheds blew down the wall of the engine-pit and displaced for a length of about 34 ft. the lines leading to those sheds. Damage was done to the roof and to the window sashes, and three engines suffered.

While the fact that the raiders did much harm to Midland property in general cannot be denied, the net result, as here plainly shown, was to cause very little interruption indeed to the working of the railway. One must further bear in mind that the dates on which mischief was caused at Burton, Derby and Nottingham covered a period when our air-defences were admittedly weak and the enemy airships could sail into and across the interior of the country almost as they felt disposed ; whereas after the very material strengthening of our defences, leading to the defeat of the Zeppelins, in the autumn of 1916, only two airship raids, and no aeroplane raids at all, were made on the Midland Counties during 1917 and 1918, though the Midland Company still received the attention of the raiders by aeroplane in regard to their lines and property in the London district and in Essex.

Various measures were taken by the company both in London and on the London, Tilbury and Southend Section in order to safeguard their staff against danger likely to arise through enemy air-raids. Among the works carried out were the following :—

Kentish Town, N.W.—Two arches under bridge No. 21 fitted up, one for use as a temporary Control Office and the other for protection of Engineer's Staff.

Hendon, N.W.—Provision of shelter under arch of bridge for protection of staff at Hendon laundry.

Blackhorse Road, Essex.—Dug-out, constructed of sleepers, provided near Blackhorse Road Station for protection of staff.

Fenchurch Street Offices.—Telegraph and telephone instruments extended to basement. Cellar area sand-bagged.

Upton Park, E.—Telegraph instrument extended to arch under bridge.

Barking, Essex.—Telegraph and telephone instruments extended into archway at East Street viaduct. Ends of two other arches screened with sleepers and sand for protection of staff.

Tilbury Dock.—Sand and sleepers supplied to enable station-master to complete a shelter he had provided for himself.

Tilbury.—Telegraph and telephone instruments extended into cellar under circulating area. Floor over cellar protected with sand, sleepers and rails.

Southend.—Telegraph and telephone instruments extended into cellar under refreshment rooms, and floor over cellar protected with sand-bags.

Shoeburyness Loco.—Windows and openings in messroom under watertank partially protected with sand-bags.

Great Northern Railway.

Messages relating to air-raids affecting the Great Northern Railway were dealt with through the company's central telephone exchange at King's Cross, and it was, therefore, of vital importance that the switch-boards, etc., and the staff (who remained at their posts during the progress of the raids) should be amply protected in order that telephone communication should be maintained. The roof of the building was heavily sand-bagged, and the windows were protected by strong iron shutters.

Shelter was afforded at several of the company's depôts in London, viz., King's Cross, Farringdon Street, Royal Mint Street, Poplar Dock and East India Dock, the basements of the buildings being protected by sand-bags. This accommodation was used by the staff and the public.

Protection was also afforded to the travelling public at King's Cross. Trains, after being filled, were drawn into the tunnel and held there until all danger had passed. The trains were then set back to the platforms in order that passengers might get into the right train for their destination.

A special shelter was provided in the arches at King's Cross goods yard for the use of the shunting staff, some of the arches being specially bricked up for the purpose. At King's Cross passenger station an emergency exit, with iron staircase, was erected for the use of the staff in the Parcels Office.

A large quantity of high explosives was carried by passenger train on the Great Northern system during the war, and, in order to afford adequate protection to this class of traffic, a special store was constructed on the down platform at King's Cross.

Sand, gravel, shovels and fire extinguishers were provided at stations and depôts for use in case of fire.

The route taken by hostile aircraft on the occasion of raids on the North-East Coast almost invariably led across some portion of the Great Northern system, but no material damage was done to the company's property, as will be seen from the following examples :—

January 31st, 1916.—Permanent-way leading from Stanton Junction to iron-works near Ilkeston damaged. Telegraph wires broken down west of Kimberley.

September 2nd, 1916.—Sluice signal box, Boston, damaged. Signalman injured.

September 23rd, 1916.—Damage done to goods line, south end of Victoria Station, Nottingham, and to engine line, Colwick, near Nottingham.

September 4th, 1917.—Signal wires damaged at Hornsey.

September 29th, 1917.—Brake van damaged by shell at King's Cross passenger station.

September 30th, 1917.—Permanent-way at Hornsey damaged by bomb.

October 19th, 1917.—Signal wires damaged at Holme, near Peterboro'.

December 6th, 1917.—Incendiary bomb splintered granite setts in roadway at Potato Market, King's Cross Goods Station.

December 18th, 1917.—Rail broken, also signal rodding, Finsbury Park, by unexploded shell.

January 28th, 1918.—Signal at Finsbury Park Station damaged by unexploded shell.

March 7th, 1918.—Windows and ceiling broken in station buildings, Totteridge.

April 12th, 1918.—Hut and engine at Lincoln slightly damaged by bombs.

Great Central Railway.

At Marylebone the basement of the Great Central Railway Company's goods warehouse was opened to the general public on various occasions during the daylight and night raids on London, and was generally occupied by from 6,000 to 7,000 people. Many cases of fainting and of a more serious nature, such as epilepsy, occurred, but the patients were satisfactorily treated by members of the staff qualified and experienced in first-aid work. A special roster was arranged for the night staff to ensure of ambulance men being always on duty.

Air-raid warnings were given at Grimsby and Immingham on no fewer than 59 occasions, and, although there were only two of these on which bombs actually fell within the Great Central Railway Company's dock areas, the enemy aircraft, in the majority of raids on the North-East Coast, passed either over or in the immediate vicinity of the dock areas, dropping many bombs in the neighbourhood. In no instance did the company's property suffer to any material extent.

At Grimsby an incendiary bomb which fell on the railway at the Riby Street platforms burned itself out and did very little damage. Two bombs dropped at Immingham by a Zeppelin did only slight damage to the permanent-way, though unfortunately they caused fatal injury to a signalman. Another bomb, also from a Zeppelin, fell on ground between the steam and electric tracks at Immingham Halt. Two high-tension feed cables were blown down for a length of 35 yards, and a military telephone cable was displaced for a length of 180 yards. Another bomb was dropped from a Zeppelin near East Halton Station, on the Barton and Immingham Railway, but only slight damage was done.

As regards other parts of the Great Central system, a high explosive bomb fell from a Zeppelin on the permanent-way at the entrance to some sidings in the goods yard at Frodingham, making a hole 9 ft. in diameter and 4 ft. deep. Traffic had to be suspended for seven hours. Four of the company's staff were injured. Slight damage was done to the permanent-way and to the signal and electrical connections. Three goods wagons were also damaged. At Victoria Station, Nottingham, a bomb from a Zeppelin fell on the down platform loop line, making a hole 4 ft. 6 in. deep and 6 ft. in diameter. An angle iron of a cross girder

was perforated, and a vertical angle was cut through. The platform wall was damaged and slight damage was done, in addition, to the permanent-way. At Sheffield one or two bombs which fell on the permanent-way stores yard demolished the bolt store and caused slight damage to some materials.

North Eastern Railway.

The district served by the North Eastern Railway was subjected not only to raids from the air but to bombardments from the sea, the latter being carried out against Scarborough (twice), Whitby, Hartlepool and Seaham Harbour.

So far as air-raids were concerned, those on the North-Eastern district were all made by airships. There were about forty warnings in all, and about twenty-three actual raids. The Hull area was the one that received the greatest number of visits, namely, thirteen; but there was no part of the company's system, whether on the north, the south or the west, that escaped the menace altogether. Three raids were made on York, the headquarters of the North Eastern Railway, and on each occasion considerable damage was done to the city; but no damage was done to railway property, notwithstanding the extensive target which the company's premises naturally presented.

At no part, in fact, of the North Eastern system was the damage done to the railway really vital. It consisted mainly of the severing of telegraph wires, the displacement of signal posts here and there, and the breaking of glass; although there was one occasion on which the fine Paragon Station at Hull had a narrow escape from very serious damage. This was on March 5th, 1916, when the station received a direct hit from a bomb. The office of the District Engineer and the Royal Station Hotel both suffered. The last visit paid to the North Eastern Railway district was on September 24th, 1917, when the clock tower of the Albert Dock, Hull, was damaged.

Special fire-brigades were formed by the North Eastern Railway Company at twenty-seven places, and at Hull, York and Loftus "dug-outs" or shelters constructed under railway arches or otherwise were provided for the protection both of the staff—who had constant duty on traffic-control work—and of the public.

Broadly speaking, interruptions of traffic caused by the raids were negligible, the damage to running track and railway structures being insignificant.

Casualties to Railwaymen on Duty.

The question may be asked as to whether, having regard to the persistency of the attacks on the railways, exceptional risks were not run by the railwaymen who remained on duty, and especially so subsequent to the decision arrived at in April, 1916, that during future raids the train services should continue to be run, though at a reduced speed, and that work in the goods yards should be continued, with reduced lights.

An inquiry into the actual number of air-raid casualties during the whole period of the war to *railwaymen on duty* has produced the following figures :—

Railway Company.	Railwaymen.		Total Casualties.
	Killed.	Injured.	
East London	nil	1	1
Great Central	1	3	4
Great Eastern	12	26	38
Great Northern	nil	19	19
Great Western	nil	2	2
Lancashire and Yorkshire	nil	1	1
London and North Western	1	10	11
London and South Western	nil	1	1
Midland	10	27	37
North Eastern	nil	2	2
South Eastern and Chatham	nil	5	5
Totals	24	97	121

All the other British Railway Companies reported "No casualties to men on duty."

The Great Eastern figures include the ten railway-workers killed and the twenty-five injured by the bombs dropped on Liverpool Street Station on June 13th, 1917. Of the twenty-seven injured on the Midland, six were not incapacitated from remaining on duty. On the London and North Western there was no record of any train, passenger or goods, being actually struck by bombs, although a driver and a fireman on an engine attached to a train of empty coaches standing on the line were injured by a bomb which fell in their immediate neighbourhood.

Conclusive evidence as to the comparatively small amount of personal risk incurred by a continuance of railway operations during enemy air-raids is thus afforded by the above figures.

Actual Extent of Traffic Interruption.

No definite conclusion can be arrived at as to whether or not the bombs which fell upon railway property did so as the result of direct aim or of chance when missiles were dropped indiscriminately; but evidence is available in other directions as to the difficulties the enemy raiders experienced in hitting particular objects when their intention so to do was beyond any possibility of doubt. Such evidence is more convincing in regard to what happened at sea. Thus in his book on "The Harwich Naval Forces: Their Part in the Great War" (Hodder

and Stoughton, 1919), Mr. E. F. Knight says that the least of the dangers faced by the mine-sweepers forming an important section of the Harwich Forces was that from the enemy Zeppelins and aeroplanes which were constantly bombing the vessels, though with such little effect that the fishermen on them took small notice of their overhead foes. Mr. Knight continues :—

> It is indeed remarkable how very little damage was ever done by Zeppelins at sea. On one occasion, it is true, the Zeppelin crews killed a number of their own countrymen—the survivors of the sinking *Blücher*—mistaking them for Englishmen. But our ships suffered practically nothing from their repeated attacks. Yet the enemy aircraft did their utmost to interfere with the operations of our mine-sweepers and mine-net laying drifters. On one occasion a Zeppelin hovered over a fleet of the latter craft which were lying in wait watching their deadly nets off the Shipwash. The Zeppelin dropped about seventeen bombs, some of which fell very close to the vessels, exploding violently and throwing up huge columns of water ; but not a single hit was made and no damage was done.

Railway termini in London should, one might assume, have offered exceptionally favourable targets ; yet in their case the hits were extremely few in number and were, as we have seen, of no consequence in the way of dislocating traffic. That bombs should drop on railway lines was a matter of course, having regard to the multiplicity of such lines in this country ; but railway bridges and viaducts were practically immune, although evidence of deliberate attempts to effect their destruction was not lacking. Then if we inquire as to what happened in regard to rolling stock, the results are specially instructive.

No part of London received more attention from the raiders than that which is comprised within the circle embracing Poplar, Stratford, Dalston, Broad Street, Liverpool Street, Fenchurch Street and Blackwall ; yet, taking the two railway companies mainly concerned in the traffic within this circle, namely, the Great Eastern and the North London, the average amount of rolling stock they had in use or standing on their lines within the said area day by day throughout the war period, and the number of vehicles either destroyed by the raiders or so far damaged as to be in need of repair, give us the following remarkable figures :—

Company.	Average Amount per Day of Rolling Stock on Lines.			No. of Vehicles Destroyed or Damaged by Raiders.		
	Passenger Coaches.	Goods Wagons.	Total.	Passenger Coaches.	Goods Wagons.	Total.
Great Eastern .	3,000	4,400	7,400	12	—	12
North London .	380	1,700	2,080	13	8	21
Total . . .	3,380	6,100	9,480	25	8	33

One should, of course, recognise that when our defences became highly developed and the raiders were kept at high altitudes the hitting of specific objects must have been more difficult than ever; yet so far as transport conditions were concerned the successes gained by the raiders had not been much greater or much more serious under the earlier conditions when our defences were notoriously weak and inefficient.

It has also to be borne in mind that, if the damage done to railway lines, structures and facilities had been far greater than was actually the case, the engineering forces of the railway companies would still have been equal to the carrying out of all necessary repairs and reconstruction within so short a period that no more than temporary inconvenience would probably have resulted. The history of the part played by railways in warfare since the formation of the pioneer Construction Corps in the American Civil War of 1861–1865 is full of examples of the speed with which apparently serious damage done to railway track and railway structures has been made good; though during the Great War a British public unacquainted with these examples may have been apt to attach exaggerated importance to reports that enemy raiders on England had caused "an interruption of railway traffic," between certain points—by smashing a few rails which could quickly be replaced!

There is to-day a firm belief in various quarters that "the war of the future will be fought in the air," and much is being said as to the imperative need for our using every effort to maintain that supremacy of the air which this country secured in 1918 and has of late been considered in danger of losing.

Into these questions of State policy it is not the province or the purpose of the present work to enter; though nothing which has here been written is to be regarded as in any way designed to discourage the taking of all necessary precautions in the way of national defence, having regard, more especially, to the possibility of any new developments in the use of aircraft for the purposes of warfare.

While, however, it is desirable that the country should be told of the valuable aid offered by British railways in the general system of anti-aircraft defences during the war of 1914–18, it is no less expedient that the real proportions of the harm then done to vital points of the railways themselves should be understood; and the undeniable fact is that—while making full allowance for the casualties caused among the British public and for the destruction of property in general—so far as regards any material interruption of transport facilities the sum total of all the damage done by enemy aircraft to the railways of this country during four years of war was no more than a negligible quantity, of no military significance or importance whatsoever.

CHAPTER XXXI.

CARRIAGE OF EXPLOSIVES.

Railway companies are accustomed to the transport of explosives and other dangerous goods by merchandise train—for use in certain collieries, quarries and other industrial enterprises—apart altogether from wartime conditions; but they are not "common carriers" of explosives. They are not bound to carry them at all unless they think fit, and subject to such special conditions as they may consider essential to the safety of life and property. They themselves, also, have to observe and enforce certain by-laws which, under the Explosives Act, 1875, and with the sanction of the Board of Trade, they have been required to make for regulating the carriage of explosives on their lines. These by-laws relate to, among other things, the giving of previous notice by a consignor of his intention to send a consignment of explosives; the time of day during which the consignments shall be sent to the railway company's forwarding station; a prohibition against the transport by passenger train of any explosives except railway fog-signals, safety cartridges and percussion caps and safety-fuses (for blasting); the conditions of loading, transport and unloading (including a condition that not more than five vehicles containing explosives shall be conveyed by any one train at any one time); the construction of the vehicles used, and a wide range of other precautions to be taken with a view to avoiding accidents. In addition to these by-laws, the companies have a "Special Classification" of explosives and other dangerous goods, notice being given that no such goods other than those provided for therein, and with due observance of the conditions of carriage, will "under any circumstances" be accepted for conveyance.

In this Special Classification, also, there is a series of General Regulations applying to explosives traffic, and a list is given of companies which do not carry certain dangerous goods at all, or do so only under specified restrictions.

From the outbreak of the war it was evident that the railway companies would be called upon to convey explosives and dangerous goods alike by goods trains and passenger trains in quantities and under conditions contravening their by-laws and increasing to a very material extent their liabilities in respect to possible loss of life or injury to person or property. The companies were naturally desirous of doing all they could to fulfil the requirements of the War Office, and certain regulations which met the needs of the situation at the outset were arranged with

the Government; but the traffic steadily assumed such proportions that by March, 1915, the taking of further action became imperative.

The agreement with the Government in regard to the working of the railways on the mobilisation of the Forces constituted a sufficient authority for contravention of the railway by-laws in respect to consignments from the Government; but no similar provision had been made in regard to traffic from a trader to the Government, or from one trader to another on account of the Government. It was further considered most desirable that rules should be laid down to prevent any indiscriminate sending of explosives by train, while the Railway Executive Committee urged that the companies should be given a form of indemnity under which the Government would themselves assume full and complete liability for loss of life, injury to the person, or loss of or damage to property due to the transport of explosives or dangerous goods on Government account in contravention of the said by-laws.

All these things were considered at a meeting which, on the instigation of the Railway Executive, and in accordance with their established policy, was held between representatives of the railway companies on the one part and of various Government departments on the other, the former including the chemists and certain other officers of five leading companies, while the latter comprised representatives of the War Office, the Admiralty and the Royal Laboratory, together with H.M. Chief Inspector of Explosives, the Assistant Director of Ordnance, and the Chief Inspector of Woolwich Arsenal.

The difficulty in regard to explosives passing from a trader to the Government, or from one trader to another on Government account, was overcome by the expedient of issuing Government certificates for all such traffic, with the additional advantage that no unauthorised person would be able to tender consignments of these dangerous goods under conditions for which the direct sanction of a State department was needed.

A beginning was made with the drawing up of rules and regulations as to the conditions under which the explosives traffic should be conducted, together with lists of the explosives that might be conveyed by train subject to the taking of specified precautions. These rules, regulations and lists were issued in pamphlet form to the railway companies in June, 1915. They were subsequently revised and supplemented so as to include the new explosives and the new liquefied gases introduced or invented from time to time throughout the war. The general indemnity desired by the companies was conceded by the Government, which assumed liability in respect to all casualties and all damage to or destruction of property that might occur through the rail transport of explosives or dangerous goods on their account under conditions contravening by-laws based on the Explosives Act or otherwise.

Organisation of the traffic was effected on a still more definite basis in October, 1915, when the Railway Executive Committee appointed a Standing Committee of Goods Managers, Superintendents and Chemists

of certain of the leading railway companies to deal with matters relating to the transport of explosives and dangerous goods. The members of this sub-committee were to confer whenever necessary with Government chemists, experts or officials in regard more especially to the constituent parts of new explosives and gases and the measures to be taken in general for ensuring safety of transport. Every requirement on the part of the naval and military authorities was, also, thus brought more directly under the notice of the railway officers specially concerned, and was subjected to the most careful consideration.

One matter of detail dealt with by the sub-committee was as to whether particular kinds of explosives should be forwarded by goods train or by passenger train. In order to meet the desire of the War Office and the Ministry of Munitions, the railway companies had, when special urgency was desired, accorded passenger-train transit to certain classes of explosives, the quantities carried per consignment being limited according to the nature of the contents. With the increasing demand for this form of transport, and with the introduction of the newer kinds of explosives, the whole subject assumed still greater importance. It was understood, therefore, that the sub-committee would, in consultation with the Government experts, go very carefully into all questions as to goods-train or passenger-train service, and make recommendations thereon to the Railway Executive Committee, who would give the final decision.

Another matter of detail, and one to which great importance was attached from a safety point of view, was that which related to the packing of explosives. These were required to be sent in strong wooden cases or boxes of various shapes and sizes; in metallic drums, cylinders or cases, or in barrels, according to contents. Illustrations of all the different kinds of packages, etc., were printed in the "Special Instructions" relating to the conveyance of Government stores in operation prior to the war, and the railway people handling the traffic were required to see that the packages containing the goods as described on the labels were of the specified type, full authority being given to them to hold back any that did not conform to regulations.

A further precaution adopted took the form of requiring that explosives of a certain character and above a specified weight should, when consigned by passenger train in other than the prescribed vans, be accompanied by a Government official who would know what to do in case of emergency. When the explosives were conveyed in the guard's van, the Government conductor was to travel in the van with them. If they were loaded in a special van, or in a compartment reserved for the purpose, the conductor was to travel either in the guard's van or in the adjoining compartment, whichever might be nearer. Government departments might also think it expedient that a conductor should accompany dangerous goods sent by merchandise train. In either case the conductor was to be furnished with an "Order" as follows:—

ORDER "B" FOR CONDUCTOR TO TRAVEL BY MERCHANDISE TRAIN OR IN THE GUARD'S VAN OF A PASSENGER TRAIN WITH DANGEROUS GOODS.

To_____(Name of Conductor).

You are hereby required to proceed from_____ to_____in charge of_____ _____and to obtain an acknowledgment of delivery.

This document is your authority for accompanying the Stores, and a copy must be shown by you to the guard of the train or other servant of the Railway Company requiring it.

You must also provide yourself with a railway ticket at the Booking Office in exchange for a warrant, or if you cannot obtain a warrant, a railway ticket for the journey must be purchased.

You will observe and obey all the regulations and directions that are from time to time in force for the safe custody and care of Explosives and other dangerous goods as promulgated by the Department, and you are particularly reminded that you must neither smoke nor carry matches.

Signed_____
Authorised Government Official.
_____Department.

Place_____

Date_____

N.B.—The Conductor is to be in possession of two copies of this order, and is to surrender one copy with his Railway Ticket on completion of the journey.

It was left to the sub-committee to decide as to which explosives, when sent by passenger train, must be "accompanied" and which might be forwarded without a Government conductor. Lists were drawn up accordingly.

In regard to the loading and unloading of wagons the "Special Instructions Relating to the Conveyance of Explosives and other Dangerous Goods" said:—

All persons whilst engaged in the loading, unloading or conveyance of explosives or other dangerous goods must observe all due precautions for the prevention of accidents by fire or explosion, and must not allow any unauthorised persons to have access to such goods, and must abstain from any act whatever which tends to cause fire or explosion and is not reasonably necessary for the purposes of loading, unloading or conveyance of such explosives, or of any other article carried therewith, and must prevent any other person from committing any such act.

No person while employed in loading, stowing in any carriage, or unloading any explosive shall wear boots or shoes with steel or iron nails, steel or iron heels, or metal tips of any kind, or have about his person any matches, explosive or means of striking a light; and all persons employed in the loading, stowing or unloading of any explosive must abstain from smoking while such loading, stowing or unloading is going on.

Magazine boots will be provided at the loading stations, and must be used by all the men appointed to do the loading and unloading of explosives in gunpowder vans. The magazine boots must be sent with the van, they must be worn by the men whenever they have occasion to enter the van and must be returned in the van.

These instructions had already been in operation in normal times

except that the use of magazine boots (that is, boots made of thick felt, without any nails), was then insisted upon in respect to the carriage of gunpowder only.

Having regard to the magnitude of the quantities carried, there was an inevitable shortage, in the early stages of the war, of the gunpowder wagons which, under peace-time conditions, had been specially provided for dangerous consignments of this type, and measures had to be taken for adapting other railway vehicles to the purpose as improvised gunpowder vans.

According to the "Special Instructions" issued, "There must not be any iron or steel in the interior of the portion of any carriage where explosive is dispatched unless the same be covered either permanently or temporarily with leather, cloth, sheet-lead or other suitable matter." There are, however, explosives *and* explosives, and one of the duties devolving upon the sub-committee was to divide the whole of those coming under the definition of "Government explosives," and packed according to the regulations laid down or as otherwise approved by the War Office, into the following classification: (1) Explosives for which gunpowder vans (standard or improvised) must be used, except when packed in metallic cylinders or metallic cases; (2) explosives which may be conveyed in ordinary closed vans, locked, and (3) explosives which may be conveyed in ordinary trucks well sheeted with good sheets.

While, again, there were explosives which could be loaded together in the same wagon without any increase of risk, there were component parts of explosives which were not dangerous until they came in contact with one another; and the sub-committee had to draw up still another classification specifying the explosives that could be loaded together in the same vehicle and those that should on no account be so consigned.

As an example of the extreme care which had to be taken in the case of explosives of an especially dangerous type, mention might be made of the samples of fulminate of mercury sent by passenger train to Woolwich for the purpose of being tested. The total amount of actual explosive matter which alone might be carried in any one van was one ounce. This one ounce was to be enclosed, with about 2 oz. of water, in a strong glass tube, rubber corked, and the tube was then to be surrounded by corrugated cardboard and packed in cotton wool in a wooden case fastened with brass screws. Finally the package was to be labelled as follows:—

GOVERNMENT EXPLOSIVE.

FULMINATE OF MERCURY SAMPLE.

The Chief Inspector,
Royal Arsenal,
Woolwich.

Per Passenger Train.

Much concern was at one time occasioned in connection with the transport of cordite paste—a high explosive which is, in effect, cordite at one stage of manufacture. There was a large production of the paste in Messrs. Nobel's factory at Ardeer, Stevenston, Ayrshire, served by the Caledonian and the Glasgow and South Western Railways. The old-established Ardeer establishment was, in fact, able to produce in excess of its own requirements, whereas the new factories which were being set up in England, and were barely completed, did not have the plant and material requisite for making the cordite paste then in such greatly increased demand. It was accordingly arranged that their wants in this respect should be supplied from Scotland. So it was that, between December, 1915, and February, 1918, when the traffic ceased, either one or two special trains, usually consisting of twelve vehicles, each of which carried about three tons of the paste, were dispatched every week either to the Royal Naval Cordite Factory, Holton Heath, Wareham, Dorset, or to other explosive works in the south.

In addition to being of a highly explosive nature, cordite paste is peculiarly sensitive alike to heat and to cold; and in the interests of safety it was essential that the paste should be carried under such conditions that the temperature by which it was surrounded would never fall below 40 degrees F., and never rise above 80 degrees F.

In the first instance special vehicles, cased with zinc, fitted with steam-heating pipes, air-tight doors and the vacuum brake were constructed for the purpose. On the outside of the brake-van of each special train a thermometer was fixed, and it was the duty of the conductor in charge to watch this thermometer and regulate the steam-heating of the loaded vans according to those changes in temperature which might well be expected to occur in the journey between Scotland and the south of England.

This arrangement, however, was not quite satisfactory, and the railway officers concerned in the traffic found themselves faced by an exceptionally novel and difficult problem in discovering how, throughout so long a journey, an equable temperature could be maintained in air-tight vehicles in which, of course, no one could travel. Happily a satisfactory solution was at last evolved.

In the brake-van of each special train, and connected with an otherwise empty van placed between the loaded vehicles and the engine, there was fixed an apparatus devised to indicate any change, above or below the specified limit, in the temperature of the vehicles in which the cordite paste was conveyed. It showed (1) a green light when the temperature was "normal," i.e., between 40 and 80 degrees F., (2) a white light when the temperature fell below 40 degrees, and (3) a red light when the temperature rose above 80 degrees. In addition to this, the apparatus was furnished with an electric bell which rang continuously as long as either the white light or the red light was showing. The conductor thus had direct evidence of the interior rather than of the exterior temperature, and could at once increase or decrease the

steam-heating as might be necessary. The new arrangement was a complete success.

Cordite manufactured at H.M. Gretna Explosives Factory was dispatched, mainly to the south, from the factory sidings at Longtown Station, on the North British Railway. The first consignments were forwarded on September 22nd, 1916. Packed in strong wooden cases, the cordite was conveyed in covered goods vans the doors of which were padlocked, while the vans were labelled with special cards. As a rule the traffic was worked by ordinary goods trains; but between the above-mentioned date and November 8th, 1918, the quantities sent were so considerable that it was frequently necessary to make extra trips between Longtown and Carlisle. The number of loaded vans specially worked under these conditions ranged from nine to forty-eight at a time, with an average of thirty vans. The total quantity of cordite passing over the North British lines during the production period amounted to, approximately, 70,000 tons.

By the Caledonian Company's route the bulk of the traffic from Gretna consisted of ether. This was carried in iron drums, in accordance with the special instructions contained in the General Railway Classification, and was loaded into open goods wagons, no special precautions being necessary. Altogether the total weight of these consignments, forwarded chiefly to stations in England, was 24,396 tons.

Explosives made in this country for use overseas were shipped mainly from Newhaven, Littlehampton and Avonmouth, via the Richborough cross-Channel barge and train-ferry services, or by the Southampton train-ferry. Such was the magnitude of the business that the explosives traffic carried by the London, Brighton and South Coast Company alone between the outbreak of the war and the signing of the Armistice amounted to the prodigious total of 2,683,156 tons. The number of trucks used for the purpose was 336,203.

Yet so complete were the safeguards taken that the transport of so immense a quantity of explosive material was effected without, so far as can be ascertained, a single accident involving personal injury or otherwise than, in the circumstances, comparatively slight damage to railway property. There were, nevertheless, several incidents connected with the traffic which deserve to be placed on record. Two of these occurred on the London, Brighton and South Coast Railway.

On September 22nd, 1917, a train loaded with ammunition was running to a southern port when, at a point near to a certain town, a truck loaded with fuses was seen to be on fire. The train was stopped and the burning truck was detached; but, in the meantime, two other trucks containing large loaded shells had become ignited. A goods inspector summoned to the spot when the trucks had been burning for some time was warned of the danger of an explosion; but he mounted one of the trucks and, in spite of the difficulties experienced in obtaining water, succeeded with the help of other members of the railway staff in extinguishing the fire. But for the courage and resourcefulness thus shown,

Collision between Three Ammunition Trains in Redstone Tunnel, Redhill, Surrey (South End).

[*To face p.* 472.

COLLISION BETWEEN THREE AMMUNITION TRAINS IN REDSTONE TUNNEL, REDHILL, SURREY (NORTH END).

Notwithstanding that the débris of the three trains filled the tunnel from rails to roof and that the explosives carried were scattered all over the line, no explosion occurred, and no one was injured.

[*To face p.* 473.

a disastrous explosion must have occurred with loss of life and much destruction of valuable material. In the *London Gazette* of Dec. 18th, 1917, it was announced that the King had been pleased to award the Albert Medal to Mr. Charles John Carne, the goods inspector in question, in recognition of his gallantry.

The other incident on the Brighton line occurred April 18th, 1918, when an up-goods train divided and the rear part came to a standstill inside Redstone Tunnel, Redhill, where another up-goods train ran into the standing vehicles and derailed them. The engine and first three trucks of the second goods train were also derailed. Before warning could be given a special down-goods train ran into the obstruction, with the result that practically the whole of this train was also derailed. A length of 40 ft. of the tunnel was filled to the crown with trucks and debris. Two of the engines were badly damaged and twenty-six wagons were either destroyed or more or less broken up. All three trains were conveying ammunition, including high-explosive shells. Shells and cartridges became separated, and loose cordite was lying about, yet no explosion occurred. Notwithstanding strenuous exertions, it was nearly two days before the tunnel was cleared of the debris and opened to traffic. Most excellent work was done by the breakdown gangs in the very confined space and under trying and dangerous conditions. Mr. George Andrews, foreman of the Brighton Company's Carriage and Wagon Department, New Cross, was, in March, 1920, appointed a Member of the Order of the British Empire in recognition of the energetic and devoted way in which he carried out his duties on the occasion, with absolute indifference to the danger he was himself incurring.

Two other accidents—though, happily, without causing explosion or fire in either case—occurred on the Caledonian Railway.

On September 11th, 1916, as a special goods train, in which were included three vehicles loaded with explosives (gunpowder in nitro-cellulose) was on its way from Glasgow (Polmadie) to Georgetown, it overran the catch points at the junction of the down loop with the down main line at Wallneuk Junction, Paisley (Glasgow and Paisley Joint Line), the engine and eight of the vehicles being derailed. At the same time a passenger train, travelling in the same direction on the down main line, ran into the derailed vehicles. A number of passengers sustained shock or slight injuries, but the wagons containing the explosives remained intact.

On October 3rd, 1916, when the 5.5 p.m. goods train from Carlisle, consisting of 41 vehicles and brake-van, was travelling between Braidwood and Carluke, it became divided on a falling gradient owing to the breaking of a coupling. The overtaking of the front portion by the rear portion caused a violent collision. Nineteen wagons were derailed, twenty-two were damaged and considerable damage was done, also, to the permanent-way. Three of the derailed wagons were loaded with cordite, but once more the explosives were unaffected.

In addition to the precautions taken to ensure the safe transport

of explosives carried by rail, others were adopted with a view to obtaining like results on railway passenger steamers. Here it was directed that the packages were to be deposited in a readily-accessible place on deck in charge of some responsible person who was to throw them overboard in case of fire or other danger. As an additional precaution it was provided that, if it were found necessary to send explosives in bulk by passenger steamer in excess of a certain quantity, no civilian passenger was to be allowed to travel by the steamer, which would thus become practically a cargo boat.

CHAPTER XXXII.

EMPLOYMENT OF WOMEN AND GIRLS.

RAILWAY companies were among the first, even if they were not actually the first, of the great employers of labour to resort to the expedient of engaging women and girls as substitutes for men in order that a larger number of the latter might be released for service with the Colours. Not only, also, were they pioneers in this direction but the number they eventually took on assumed exceptionally large proportions, while the experiences they thus had occasion to gain in comparing the respective merits of masculine and feminine labour in a wide range of railway activities offer many points of public interest.

It was as early in the war as February, 1915, that the British railway companies began to realise the possibilities open to them in the directions stated. There had been conferences between Lord Kitchener and representatives of the Railway Executive Committee as to what could be done to permit of the enlistment of railwaymen in still greater numbers, and the suggestion was made that one means towards the achievement of this purpose would be found in the taking of a greater number of women into the railway service than were then already employed. In certain grades, as, for instance, those of engine-drivers, firemen and shunters, a substitution of women for men would, admittedly, be impracticable; but there were many others in regard to which it was felt that women might readily take the place of men for the duration of the war.

How, following upon this, the Railway Executive Committee appointed a sub-committee to deal with the question of releasing men for enlistment in the Army, and how this sub-committee, meeting first on March 24th, 1915, proposed, among other things, that the employment of women should be extended, has already been told in Chapter XXVIII (see p. 351). Here it may be added that the late Mr. Potter, General Manager of the Great Western Railway, and Chairman of the sub-committee in question, took a special interest in this question of employing women substitutes, and that the results of the recommendations made by the sub-committee were soon manifested. The greatest increase at first was naturally found in the employment of women and girls for clerical duties; and more and still more were soon being taken on as booking-clerks, parcel clerks, ticket-collectors, ticket-examiners, dining-car attendants, porters, carriage-cleaners, telegraphists, etc.

These developments gave rise to some degree of concern on the part

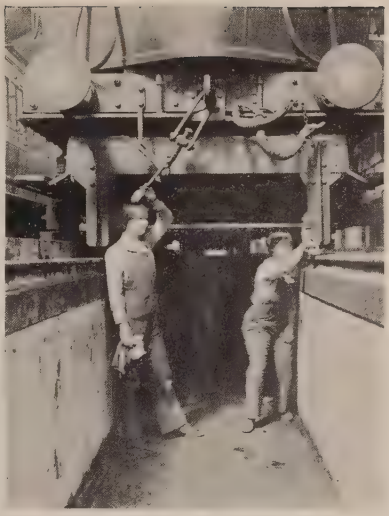
of the National Union of Railwaymen, and that organisation asked for an assurance from the railway companies that the taking on of women in capacities in which they were not formerly employed was an emergency provision arising out of the circumstances created by the war, and one that would not prejudice any undertaking given by the companies as to the re-employment, on the conclusion of the war, of men who had joined the Colours. An assurance to this effect was given, and it was further placed on record that the employment of women during the war in capacities in which they had not previously been employed was without prejudice to the general question of the employment of women.

One almost inevitable result of the taking over of men's work by women was the adoption by the latter of men's attire when the conditions rendered the resort to this expedient especially advantageous. The precedent was, it is believed, first set by the women carriage-cleaners employed at the London and South Western Railway Company's Wimbledon Park sidings. They made for themselves some masculine garments which they found so well adapted to the duties of carriage-cleaning that other women workers followed their example alike in this and in various other occupations. Thereupon the company undertook to supply the garments in question, regarding them as in the nature of "uniform" for their women employees. Before long the wearing of men's clothes by women workers in various grades of railway employment was generally adopted, and it led to a great advance in the employment of women as substitutes for men, thus allowing of the latter being released in still greater number for service with the forces.

As the war progressed and the demand for men became more urgent than ever, women were employed by the railway companies on a variety of other non-feminine occupations, some of which might well be regarded as involving so great a strain on the physical powers of the worker as not to be suitable for women at all. There came a time, in fact, when women, in addition to their range of light employments in the railway service, engaged in so much manual labour formerly undertaken exclusively by men that they were to be found in almost every grade on which it was practicable to employ them and for which previous training was not an essential qualification.

In August, 1916, returns were obtained from sixty-eight railway companies, comprising a large number of small companies and a few large ones, as to the extent to which the substitution of female for male employees had been adopted by them. Considerable difference was found in the action taken by the companies concerned. Some were still employing no women at all. Others had not increased their number during the war. These conditions related mainly to the smaller companies. The returns from larger ones were much more satisfactory. The London, Brighton and South Coast Company, for example, had increased the number of their women workers from ninety-nine to 683, and the Glasgow and South Western from 442 to 1,095. The largest increase shown by the companies included in the return was in respect

Setting the Fashion.



Engine Cleaning.

Ticket Printing.

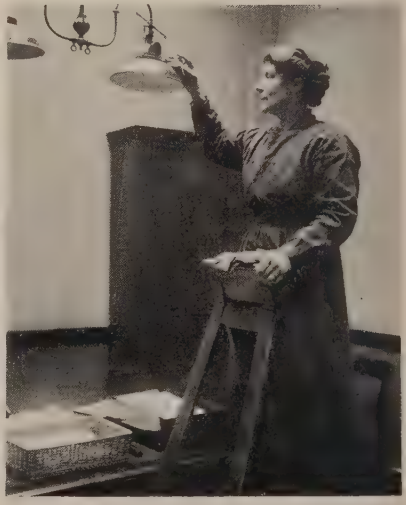
A Ticket Collector.

Women Workers on the London and South Western.

[*To face p.* 476.

Sorting Waste Paper at Nine Elms.

Cleaning Carriage Interiors.



A Gas-Fittings Specialist.

More Women Workers on the L. & S.W.R.

[*To face p.* 477.

to women clerks, the aggregate having risen from a pre-war total of 2,104 to 13,930. Twenty-three companies were then employing women as porters; twenty-nine had women ticket-collectors; eight had women engine-cleaners and twelve employed women in workshops.

At the end of October, 1916, the Railway Executive Committee obtained a fresh set of returns, furnished by twelve leading companies; and here, again, much interesting information was presented.

The total number of women and girls then in the service of these twelve companies was over 33,000. This figure compared with 13,046, the total for the whole of the British railway companies on the outbreak of the war, namely, 4,564 engaged on railway work proper and 8,482 in "other categories," such as waitresses in refreshment rooms, waiting-room attendants, hotel staffs, washerwomen, charwomen, etc. The 33,000 of the later date included 1,068 waitresses and 2,825 office-cleaners, so that to this extent, at least, essentially feminine occupations were being followed; but the special interest in the list now drawn up, apart from the sum total of the figures, lay in the fact that no fewer than 135 separate and distinct occupations then being followed by girls and women on British railways were specified. Nor did the list profess to be anything like complete in this respect, 2,189 out of the 33,000 being grouped under the heading of "miscellaneous."

How varied the occupations then being followed on the railway by women and girls had become, and the numbers engaged in various grades or departments (apart from those in the non-specified miscellaneous group), may be shown by the following typical examples: Clerks, 13,904; carriage-cleaners, 2,173; workshop women (various), 1,278; platform porters, 1,098; munition workers, 1,046; goods porters, 901; ticket-collectors or ticket-examiners, 706; gatekeepers, 705; engine-cleaners, 587; labourers, 239; machinists, 178; messengers, 150; parcel porters, 147; horse-cloth and sack repairers, 121; painters, 99; dining-car attendants, 93; number-takers, 79; cellar and page girls, 40; weighing-machine attendants, 23; brass lacquerers, 23; letter-sorters, 15; horse-keepers, 14; carters, 12; train attendants, 11; cloak-room attendants, 10; luggage-room porters, 10; wagon repairers, 8; hotel porters, 6; harness-cleaners, 6; warehousewomen, 5; train-information attendants, 4; crockery collectors, 4; ferry attendants, bridge-keepers, blind-pullers, wharfingers and flag makers, two each, and gardener, carver, printer, billiard-marker and signal cleaner and lighter, one each.

Taking individual companies, it was shown that at this date one company (the Great Central) had increased the number of its women clerks from seventy to 1,526, and employed eighteen women ticket-collectors, 186 women carriage-cleaners, fifty-five signal-cleaners, and 454 porters. Another (the Midland) had 480 women carriage-cleaners, 475 engine-cleaners, 226 labourers in workshops and thirty-seven other women labourers. Still another, while employing women neither as engine-cleaners nor labourers, had 142 as ticket-collectors.

A subsequent list of grades in which women were being employed by various companies included the following, in addition to those already mentioned: Call girl, check-office assistant, stores assistant, lamp-room attendant, tube-cleaner, cabin attendant, luggage-weigher, searcher, gate-keeper, lock-keeper, lamplighter, weighing-machine attendant, canal-traffic enterer, time-keeper, polisher, coil-winder, concrete-block maker, cellar and page girl, baker, halt attendant, stationery packer, coal storer, signal-cleaner and lighter, crane-driver, stable-washer, van-washer and yard woman.

By the end of 1916 the number of women employed on the making of munitions of war in railway workshops was 2,251. This figure steadily increased until the end of October, 1917, when it attained a maximum of 4,698. From that time it decreased month by month until, by the end of October, 1918 (the latest date of the periodical returns collected in respect to all companies), it had fallen to 2,045. The number of women and girls employed on "railway work," as distinct from munition work and "other categories," rose from 4,564 on August 4th, 1914, to 34,272 on December 31st, 1916, and to 50,828 on December 31st, 1917. A maximum of 55,942 was reached on September 30th, 1918. The greatest number of women engaged on railways in "other categories" was attained on October 31st, 1918. The figure then stood at 10,718. Taking the sum total of women and girls employed by British railway companies in all capacities, one finds that this was as follows at the dates mentioned:—August 4th, 1914: 13,046; December 31st, 1916: 46,316; December 31st, 1917: 65,389; September 30th, 1918: 68,801 (the maximum); October 31st, 1918: 68,637.

The maximum of 68,800 relates, of course, to the number of women and girls still in the railway service on the date mentioned. If allowance is made for those who had taken up railway work but kept to it for short or comparatively short periods only, the aggregate would be far in excess of the figure stated.

According to later returns obtained by the Ministry of Transport, and quoted in the House of Commons on November 10th, 1919, by the Parliamentary Secretary of that department, the number of women employed by fourteen principal British railway companies on November 11th, 1918, was 55,796, while the number on July 30th, 1919, was 34,545. Sir Rhys Williams added:—

> Most of the women still employed are only retained temporarily pending the return of the men who left the companies' service to join the Army and have not yet been demobilised but who have been promised that the positions which they left shall be kept open for them.

The value of the services rendered by so considerable a body of women in enabling many more railwaymen to join the Colours than could otherwise have been spared if the railways were to carry on is beyond all question, and the women who undertook the duties thus assigned to them are deserving of the gratitude of the country, and are entitled

Goods Porters on the South Eastern and Chatham Railway.

Women Checkers and Loaders.
(Bricklayers' Arms Station, S.E. & C. Rly.)

[To face p. 478.

VAN WASHERS.

CARRIAGE CLEANERS ON THE GREAT NORTHERN.

[*To face p.* 479.

to consider that they, also, helped to win the war, just as though they had themselves been qualified to take part in the fighting.

If, however, it should be asked what conclusions as to the suitability of women to undertake railway work under normal conditions can be based on the experience of their labour under the abnormal conditions of war, the reply to be given must vary according to (1) the position filled, (2) the local circumstances thereof, and (3) certain general considerations.

The greatest success of war-time women workers on railways was attained in respect to clerical duties. Some of them, holders of University degrees, and employed in the offices of General Managers or other high officers who may not have had lady clerks before, were found to be most capable women, and the work they did was done very well indeed. In head offices and large goods offices women in general were regarded as eminently suited to minor clerical work so long as this was mainly of a routine kind. In such matters as typing and simple accounts, the work of women and girls compared, according to one authority, with that of younger men and boys. In any case they were so far successful, especially when working under male supervision, that in January, 1918, fifty per cent. of the clerical staff employed on the principal railways were women. Generally speaking, however, women clerks were found to be more lacking in initiative than men; they were less useful to the companies than men because they could not be so readily transferred from one sphere of duties to another, while, as a rule, three women were required to do the work of two men, although it is possible that the position would be improved in proportion as the women gained more experience.

As booking-clerks, women who took up the work did so with less training than, in pre-war days, would have been undergone by the average male booking-clerk; but they did very well at large stations where the conditions allowed of their being allotted day-turns of duty. On some of the suburban lines, however, there is practically an all-night service; on others the ordinary trains which run till midnight or up to 1 a.m., are succeeded by workmen's trains which start between 4 a.m. and 5 a.m. Here it was, of course, necessary that the booking-offices should be kept open to suit these trains; but there was an obvious inexpediency in the taking on of either the very late or the very early turns of duty by women and girls, who, from this point of view, at least, could not be considered equal to men.

Similar conditions in respect to large stations and hours applied to women as ticket-collectors, with the further consideration that at smaller stations women did not take over the full range of duties previously performed by men who not only collected tickets but helped with parcels or luggage and made themselves generally useful. Neither, again, as ticket-collectors or ticket-examiners on the trains were women found to be so expeditious as men.

As porters, again, the employment of women was mainly limited

to the larger stations; and even there they were not always equal to the handling of the heavier luggage—a consideration which led to the weight allowed to travellers being restricted. At smaller stations where the male porter had not only looked after the passengers and dealt with luggage of whatever bulk but could fill up his time with shunting, lighting signal-lamps, etc., a woman was clearly not an adequate substitute. Nor could women porters be called upon, in the same way as men porters, to act when necessary as railway guards. In any case, also, the rule of three women being wanted in place of two men prevailed throughout all the porterage grades.

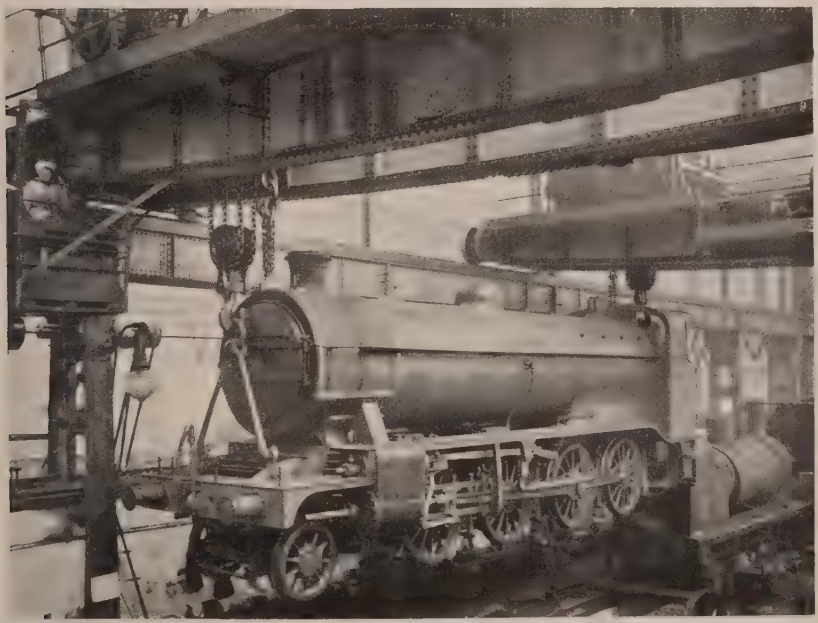
Women carriage-cleaners had proved their usefulness prior to the outbreak of hostilities. The number now taken on for an occupation well suited to those belonging to the working classes assumed considerable proportions, and the results were eminently satisfactory. It was said of them that they took more time over what they did, and that their output was only about fifty per cent. of that done by men; but they cleaned the insides of the carriages more thoroughly, and in this respect the sympathies of railway travellers would certainly favour the women.

In all manual work involving any degree of strain upon the physical system of the worker, women, as might well be expected, were not nearly as efficient as men. This was especially shown in such grades as that of goods porter. Not only had the weight of the consignments to be taken into account, but, while the pushing of a loaded trolley on the level might be within the capacity of the woman worker, a much greater effort was required to get the same trolley up the incline leading to the goods wagon into which the commodities might have to be loaded. It was then that the strain really began to tell. Much of the work, in fact, in connection with the handling of goods was of so laborious a type that women should not, it was considered, be allowed to undertake it at all except under conditions of grave emergency. Taking all the grades here concerned, it was once more found that in almost every instance three women were wanted to do the work of two men.

There was at one time a tendency on the part of certain railway companies to put women into signal boxes on branch and subsidiary lines, but although the companies themselves considered that the women were equal to the work, the men in signal boxes alongside were apt to raise objections and declare that "they could not accept the responsibility."

Coming now to general considerations, the view taken by probably the majority of railway officials was that, whilst women could carry out the less important duties connected with railway work, they were not, as a body, equal to men in the more important posts; they were not physically fitted for the heavier duties; they were not so well qualified to deal with the emergencies always liable to arise on railways, while, through a lack of railway training, they could not, however proficient in one grade, be called upon readily to take up the work of absentees in another grade.

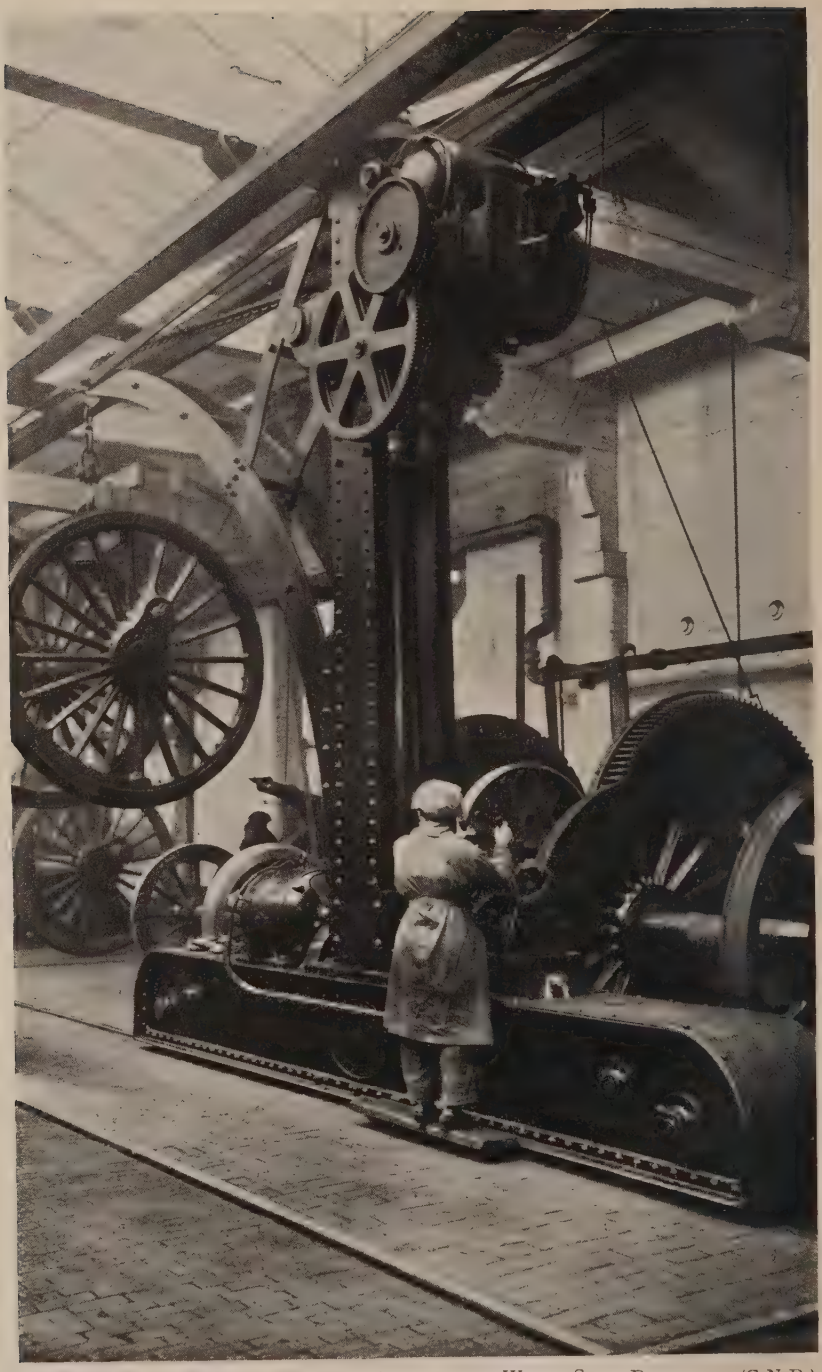
Painting and Varnishing Locomotives at Doncaster.



Operating a 35-ton Overhead Crane in Engine-Erecting Shop, Doncaster (Great Northern Railway).

(A large Locomotive is being lifted by the pulling of a Lever.)

[*To face p.* 480.



Operating a 5-ton Electric Walking-Crane in the Wheel Shop, Doncaster (G.N.R.).

[To face p. 481.

To this last-mentioned statement it might be replied that women could acquire the said training, and thus qualify for other grades than those in which they actually worked. Here, however, one must bear in mind that the outlook of the average boy, youth or man who enters the railway service differs essentially from that of the average girl or woman. In the former case the new railway worker expects to spend his life at railway work, as his father and grandfather may have done before him; and he knows, whether he begins as clerk or as porter, that there are open to him possibilities of promotion which may lead to his eventually attaining to what he would regard as a very desirable post indeed. Hence the junior, or the subordinate, generally welcomes any opportunity that may be offered to him of showing his fitness for promotion. As against all this, the average girl or woman is more apt to regard her post on the railway as a temporary one and one that in the event of her marriage she would not want to occupy any longer. Whatever her prospects in this direction, she is generally more ready to settle down to the routine work to which she may find herself allocated, and not only does not seek for the opportunities to fill temporarily the more important posts which are so welcome to an aspiring youth, but rather shrinks from assuming responsibilities she may regard as beyond her powers. For these reasons, apart from the conscientious performance of her ordinary duties, she probably does not take the same direct interest in railway work as a man, and, consequently, is of less value to a company.

One must, however, remember that the women and girls who took on this war-time railway work were expressly warned that their engagement was a temporary one only, and that they must not look forward to a permanency. In these circumstances there was still less encouragement even for the more intelligent of those in the clerical grades to qualify for higher positions which they would have to give up as soon as the men for whom they were acting as substitutes came back from the war.

The lack of desire for training in higher branches of railway work was especially characteristic of women employed in the manual grades. These women were almost invariably content to follow instructions in regard to the work to which they were put and did not aspire to anything better. Their periods of service, too, were in many cases very short, as though they either soon wearied of the work or else realised their physical unfitness for it. Out of a total of 1,483 women employed at the London stations of one of the principal companies during the course of the war, 633 resigned after one month's service, 126 after two months, 124 after three months and the remainder after varying periods up to about eighteen months. In the Goods Department of the same company, out of a total of 1,022 resignations, 548 were within one month, and 104 after more than one month and less than two months. The number who had been in the company's service in December, 1918, for periods of eighteen months and over was only 108. Then the women employed

in manual work at the company's principal goods station were especially bad time-keepers. Forty-two of them lost sixty days through being absent without leave. Out of a staff of 152 women, 116 lost 165 hours in a single week by arriving late on duty. Men workers were found to stay away less and to keep much better time than the women. Among the clerical staff punctuality was much better observed, though the percentage of absence through illness was higher among the women than among the men.

In regard to the claims which have been advanced that women in the railway service should have rates of pay equal to those of men in corresponding grades and positions, it is held that, inasmuch as the value of female labour to a railway company is not equal to that of men, any attempt to enforce the principle of equality in remuneration would lead to a discontinuance of the employment of women save, perhaps, under exceptional conditions.

CHAPTER XXXIII.

ADMIRALTY TRAFFIC.

THERE were many respects in which the demands made upon British railways by the Admiralty differed in character and degree from those made by the War Office, and, whilst these differences were inevitable, owing to the varying nature of the conditions to be met in each instance, the result was that the complications of the rail transport situation at home were increased in a way and to an extent that few persons among the British public have probably yet realised.

One is accustomed to hear of *the* "Great War"; but from a railway standpoint there were, in effect, *two* Great Wars which went on, and had to be provided for, concurrently, namely, a war on sea as well as a war on land. For the nation, the Naval War and the Military Campaign formed part only of one and the same tremendous conflict; but for the railways each presented its own special and, in many instances, its own distinctive claims, calling for distinctive organisation and the provision of what were often materially different facilities. Although, too, the sum total of what the railways did for the Admiralty in the matter of transport may have been much less than that done for the War Office, having regard to the vastly greater magnitude of the military forces as compared with the naval forces, it is open to consideration whether the requirements met by the railways on account of the Navy were not, in proportion to the number of men concerned, even greater and more exacting, relatively, than in the case of the Army.

So far as regards personnel, the fact that the chief port for the embarkation of naval forces *en route* for the Grand Fleet was Thurso, at the extreme North of Scotland, gave a much longer average journey for the majority of those concerned than the corresponding average for most of the troops joining transports at Southampton or Folkestone. Then, whereas an Army in the Field may have in its rear rest-houses for the war-weary, and casualty stations or hospitals for the sick and wounded, the Fleet at sea has no such rear available, while, for reasons dealt with more fully in the Chapter on Naval Ambulance Trains, even seamen who are merely indisposed may, unless likely to be well again within a day or two, be sent to a hospital ashore, the adoption of this course involving, probably, a rail journey that might not be needed in the case of troops on service in France or elsewhere. The conditions, also, of life at sea render desirable a more frequent concession of leave

than is necessary with troops having greater scope for movement and more opportunities for change and relaxation.

It was, however, in regard to *matériel* that the proportionately greater demands of the Navy upon the home railways were mainly experienced. The Admiralty had to provide everything that was wanted to enable the Fleet alike to live and move and have its being and to fulfil its functions as a Fighting Force. In the matter of provisions, ships of war keeping watch and guard at sea must either have on board supplies adequate for a long period or else be in close and constant communication with their base. Troops on land may, in case of need, be able to forage for themselves, purchase local supplies or make requisitions on occupied territory ; but the ultimate position of a Fleet at sea which was unable to replenish an exhausted stock of provisions would be grave indeed.

Hopeless, too, would be the position of a Fleet unable to secure its requirements in regard to coal—a commodity of which, as will be shown later on, enormous quantities for naval purposes were carried by the railways during the war. This, also, was a traffic peculiar to the Admiralty, as distinct from the War Office. Armaments and ammunition, it is true, were carried for both services ; but the big guns conveyed to certain ports for the warships made far heavier demands on the transport facilities of the railways, and caused much more trouble and inconvenience, than was the case with armaments wanted by overseas Armies.

The shipbuilding on Admiralty account involved the carrying on the railways of much exceptionally heavy and bulky traffic for which special vehicles and special methods of working were needed.

A considerable amount of repair work for the Armies in the Field was done at workshops established in their immediate rear ; but ships of war in need of repairs or of a refit which could not be done at sea had to go to a dockyard for the purpose, just as defective armaments or machinery might have to be sent ashore to be put right in engineering works in some part either of England or Scotland or in one or other of the dockyards in the south of England, where practically all stocks of naval stores were centralised. This meant, in any case, a great flow of naval traffic in material between south and north or north and south.

Taking, by way of example, the case of Invergordon (the repairing base in Scotland of the Grand Fleet), ships of war arriving there for refit were allowed exactly ten days as the period within which they were to be declared ready for sea again, and this period of time was to count from within two hours of their arriving to the *exact hour* at which the ten days' time-limit would then expire.

No margin at all, apart from the short one in the first instance, was allowed for. It might have been desirable that the vessel should undergo the refit for which she had gone into dock ; but, unless this were absolutely essential to her safety at sea, she was to leave again within the ten days whether the work could be carried out by then or not.

Under these conditions there was an altogether exceptional element of urgency in much of the naval traffic; and, in view of the long distances involved, it was most desirable, in the interests of the railway companies as well as of the Admiralty, that some definite arrangements should be made for the transit of the very considerable traffic arising in the south and south-west and south-east of England for Rosyth, Aberdeen and the East Coast of Scotland north thereof. To this end, special daily through services were arranged for all kinds of stores from Chatham, Portsmouth and Devonport Dockyards to Aberdeen, with intermediate services to Rosyth and continued services to Invergordon.

An important consideration was that, on "opening up" the machinery etc., of a ship undergoing repairs, unforeseen requirements would be revealed; and in this case, especially, the necessary material might be wanted with the express delivery that only passenger-train transport could assure in order that everything should be ready within the time-limit, although even then circumstances might arise which would nullify the advantage of the service thus resorted to.

Suppose, for instance, it was proposed that a ship should be refitted with (say) a new propeller or anchor. Orders would be given to the ship to call at Invergordon on a certain date in the near future, and arrangements would be made for the conveyance of the article by passenger train, as the most certain means of getting it there in time; but it might happen that, owing to some development in the strategical situation, the ship either did not call at Invergordon at all or could not do so until some weeks later. Alternatively the ship might have arrived in Cromarty Firth overnight and been there with a number of other warships; yet some movement, or expected movement, on the part of the enemy would have led to the whole of them going out to sea again during the night, leaving the Firth clear by the morning.

In the fact that the movements of a warship might be so uncertain—apart from the question as to a time-limit for her stay in port—there was seen to be further reason for a resort to passenger-train in preference to goods-train services for many classes of naval stores, notwithstanding their substantial bulk or heavy weight.

Finally, one must bear in mind the augmentation of the Fleet—itself greatly expanded—by numerous Auxiliary Services organised for the purposes of the war, and the wide range of duties undertaken by the Admiralty. Like the Army, the Navy was, primarily, a Fighting Force; but under the conditions which arose the Admiralty had to provide transport, not alone for naval combatants, but for land combatants sent overseas. It had to become the carrier of stores and supplies for troops across the ocean as well as for seamen whose *locus* was on the ocean. In each case it supplemented on the seas the services rendered by railways on land. Then the Navy had to act as the Police of the Seas, patrolling the ocean highways, clearing them of their war-time dangers to our own shipping, planting them with dangers—in the form of mines—to the warships of the enemy, convoying merchantmen

in safety to their ports, and keeping a sharp look-out for would-be doers of evil deeds.

For the ultimate supply of most of their material requirements in these and other directions the Fleet and its auxiliary vessels were more or less dependent, directly or indirectly, upon the railways; but the dependence upon the British railway companies went beyond even this. On the demand of the Admiralty, the companies surrendered most of their steamships to them for the purposes of the war, undertook minor repairs upon them, and provided and provisioned the crews. As for the railway-owned ports, docks and harbours which the Government commandeered, it is difficult to conceive how the war could have been carried on without them. The railway companies also loaned engines and rolling stock for Admiralty purposes in dockyards or elsewhere; they ran special services of trains for Admiralty workers, and they made in their railway workshops munitions of war for the Admiralty no less than for the War Office.

An Admiralty Rail Transport Department.

Here, however, we are especially concerned in rail transport work done on Admiralty account; and this was of so varied, so complicated and so voluminous a nature that the Admiralty decided to appoint a technical railway officer to look after its interests in connection with rail traffic.

Accordingly in January, 1916, an officer selected from the staff of the Great Northern Railway Company, Mr. H. F. Whitworth, joined the Admiralty service and became adviser to the departments concerned in all matters affecting transit by rail of Admiralty goods and stores with the exception of coal, then the subject of a separate organisation. Granted a commission as Lieutenant in the Royal Naval Volunteer Reserve, he was promoted to the rank of Lieutenant-Commander in February, 1917, and to that of Commander in September, 1917, when, as Principal Rail Transport Officer, he was placed in charge of a small department designed to deal with Admiralty rail transport in general, including coal and oil fuel, though exclusive of personnel. Two Assistant Rail Transport Officers were appointed, namely, one from the staff of the Great Western Railway Company and one from that of the Lancashire and Yorkshire Railway Company. Each of these officers received the rank of Lieutenant, R.N.V.R.

Towards the end of 1916 came the creation of the Ministry of Shipping, the purpose of which was to secure the most effective utilisation of our mercantile fleet and so compensate, as far as might be, for the losses therein due to enemy submarines. Then the reconstruction of the Admiralty in 1917 led to the adoption, on the administrative side, of a policy designed to strengthen the shipbuilding and production departments, by providing an organisation which would confer on the Admiralty advantages corresponding to those derived by the Army from the Ministry of Munitions, and to develop and utilise to the best advantage the whole

of the shipbuilding resources of the country, concentrating them under one authority. For the effecting of this purpose, Sir Eric Geddes was appointed an additional member of the Board of Admiralty, with the title of Controller and the honorary and temporary rank of Vice-Admiral, and was made responsible for meeting the shipbuilding requirements alike of the Admiralty, the War Office, the Ministry of Shipping and other Government departments. He also assumed control of the production of armaments, munitions, and materials of all kinds for the Navy, and he still further took over from the Ministry of Shipping the responsibility which that department had assumed for merchant tonnage construction, though at a later period the work undertaken in connection with merchant shipping was transferred back again to the Shipping Controller. These measures were, in turn, supplemented by the creation of local production organisations to deal with steel and other priority material for building warships, standard ships, etc. The eventual result of the new conditions was an increased production of armaments of all descriptions and of every kind of material needed for the repair of ships.

All this naturally led to a great increase in the duties devolving upon the Admiralty Rail Transport Department, and the staff underwent further expansion until at the Armistice it consisted of, in addition to the Principal Rail Transport Officer, five Transport Officers (each holding the rank of Lieutenant in the R.N.V.R.), who had been selected from the staffs of the Great Western and Lancashire and Yorkshire Railways, and a clerical staff on which were a retired District Traffic Manager of the Indian State Railways and seven ladies.

Supervision of the transit of all goods in which the Admiralty was concerned was now centred in this one department, the Principal Railway Transport Officer and his staff becoming the advisers on all matters relating to the movement by rail of coal, oil-fuel, material, stores, etc., required by the Fleet and its auxiliaries, and facilitating in these and other respects the manifold and constantly-widening activities of the Admiralty.

The two rooms occupied by the department in the West Block of the Admiralty were on the Admiralty telephone exchange, and the means were thus afforded for getting into direct communication with Fleet bases, dockyards, and all other kinds of Admiralty establishments, with shipbuilding yards, steel-rolling mills, Admiralty contractors, and so on. The department also had, through the Railway Executive Committee, direct telephonic communication with the headquarters of railway companies in any part of Great Britain.

Thanks to all these arrangements and facilities, the department was enabled in a pre-eminent degree to discharge its special function as an intermediary between the railways and those engaged on Admiralty work who required to make use of them. It represented, in fact, still another example of that co-ordination and co-operation between possibly conflicting interests which in so large a measure was the open secret of the success attained in the working of rail transport throughout the

war. Railway companies could approach the Admiralty with an assurance that their points of view would have sympathetic consideration. Shipbuilding firms or naval contractors, under obligation to deliver their goods with the utmost speed or by a given date, and unable—owing, perhaps, to some local difficulties—to obtain the transport facilities they wanted, could appeal to the department with an assurance that they were dealing with the Admiralty through liaison officers themselves experts in transport matters and desirous of affording them every possible help. As for Admiralty traffic in general, it was greatly facilitated by this co-operation between the different interests, while a further interesting fact, which should not be ignored, is that there were occasions when, on precedence being claimed for particular consignments, *not* on any ground of exceptional urgency, but merely because they *were* Admiralty traffic, the officers of the Rail Transport Department, being not only Admiralty servants but railway men who could take a broad view of national conditions and requirements, represented to the departments concerned the desirability of allowing precedence to be given, rather, to food supplies for the civil community.

Nor did the help given by the department in the surmounting of transport difficulties depend exclusively on telephonic communications, however useful these might be in a vast number of instances. The members of the staff were constantly travelling about the country to hold, or to take part in, inquiries at Fleet bases, dockyards and elsewhere in order to effect solutions of the traffic problems presenting themselves from time to time. An additional advantage of this arrangement was that the Admiralty representatives were brought into personal touch with the head and district officers of all the railways together with representatives of all the other interests concerned. In this way immediate difficulties were more readily overcome and the prospect of avoiding others in the future was greatly increased.

Admiralty Coal.

From 80 to 90 per cent. of the coal for the Fleet, and the whole of that wanted for the fighting ships of the Fleet, was steam coal from collieries situate in the Aberdare and Rhondda districts of South Wales. Down to the outbreak of war, the supplies had been forwarded to destination exclusively by sea, and, while there was no lack of colliers, the Admiralty did not then possess or have on hire a single truck for the transport of the coal by rail, though pre-war arrangements concerning matters of naval policy had naturally included plans for the coaling of the Fleet by rail deliveries at any time that the country might be engaged in war.

When the entrance of this country upon a conflict with Germany became inevitable, one of the first things done by the Admiralty was to send to South Wales a representative who not only completed contracts for the supply of coal for the Fleet but at once secured, on hire, 4,000 trucks which, supplementing the colliers still to be made use of

as far as possible, were to ensure the maintenance of supplies by rail in the event of difficulties arising in respect to transit by sea. For a time most of the coal continued to be carried by colliers going from South Wales along the West Coast, across the Irish Sea and around the North of Scotland to Scapa, where the fighting ships were coaled ; but so many of the vessels were sunk by enemy submarines that increasing dependence had to be placed on rail transport, although a certain number of colliers continued to be employed down to the signing of the Armistice. The transition from sea to rail was somewhat gradual, additional coal trucks to the extent of 200 or 300 at a time being engaged as occasion required ; but eventually the number hired by the Admiralty and used by them for the said purpose was 16,000. For the whole of these, with the exception of a few hundreds, they were indebted to one Wagon-hiring Company which made exceptional efforts to ensure the provision of the necessary rolling stock, and in this way rendered good service to the Navy and to the country.

It was some twelve months after the outbreak of war that the port of Grangemouth was adopted as the main base for the coaling of the Fleet. The lines of the Highland Railway between Perth and Thurso were so crowded with traffic, and the available accommodation at Thurso itself was so limited, that it was thought better to send the coal (by rail) from South Wales to Grangemouth, load it on to colliers there, and forward it thence by sea to Scapa. To this end it was expedient that good stores of coal for the Fleet should always be available at Grangemouth, and the arrangement made was that, apart from what was on rail, there should be kept on hand at the port a loaded stock in 10-ton and 12-ton wagons ready for removal to any point in the docks where it might be wanted, and that a further quantity should be stacked as a reserve supply in case of need, the loading thereof into trucks being done as required.

Whilst the bulk of the Welsh coal for the Admiralty eventually went to Grangemouth, large quantities were also sent to Glasgow for ships coaling on the West Coast, and to Immingham and Newcastle for ships based either on the former port or on the Tyne. Other supplies went to Southampton, Holyhead and elsewhere for the use of transports. The naval base at Harwich depended mainly on coal drawn from Yorkshire.

From South Wales the traffic was carried by special trains which ran on schedule time, bore distinctive labels indicating that they were on Admiralty service, and were specially signalled for the entire journey. Pontypool Road, on the Great Western system, was the concentration point for the loaded wagons collected from the various lines serving the Aberdare and Rhondda districts, namely, the Great Western Vale of Neath Line, the Taff Vale, viâ Quaker's Yard and the Great Western, and the Taff Vale, viâ Pontypridd, Aber Junction, the Rhymney line, Hengoed, and the Great Western. It was thus from Pontypool Road that the first of a prolonged series of north-bound war-time specials

left at 12.35 p.m. on August 27th, 1914, on the 375-mile journey to Grangemouth.

Down to October, 1915, the whole of the traffic for Scotland was worked by the Great Western to Warrington, where it was handed over to the London and North Western to be taken thence, viâ Preston, to Carlisle, and so on to destination viâ the Caledonian, the Glasgow and South Western or the North British. It was then arranged that half the traffic should be diverted at Warrington and taken viâ Patricroft (Lancashire and Yorkshire), Normanton (North Eastern), and Berwick-on-Tweed (North British), thus giving a certain degree of relief to the West Coast Route. In the summer of 1916 it became the turn of the East Coast Route to ask for relief. Not only had that route to deal with Admiralty coal traffic for Tyne ports in addition to its share in that for Scotland, but difficulties had arisen on account of the transfer of so much of the coasting traffic to the railways and the dislocation caused by the enemy air-raids. The East Coast Route suffered from the further disadvantage, as compared with routes that were more inland, of being open to attacks from the sea; and the fact that such attacks were being made was one that was not to be despised. In this combination of circumstances it was arranged that a certain proportion of the Admiralty-coal specials for Scotland should thenceforward go on from Warrington to Carlisle viâ Blackburn (Lancashire and Yorkshire) and Hellifield (Midland).

Early in 1918 the traffic had assumed such proportions that an average of about seventy-nine special trains, carrying 32,000 tons of coal, were being run every week. Yet even this number was inadequate to meet the still-increasing requirements, and it became necessary to put on thirty more specials a week for the conveyance of a further 12,100 tons, increasing the weekly totals to 109 trains and 44,100 tons of coal. The specials were to be run on the basis of fifteen a day for each of the seven days of the week, the remaining four being sent as convenient.

Down to this time the Great Western had continued to deal with all the traffic for Scotland between Pontypool Road and Warrington, and the traffic had become so great that practically the whole of the company's heaviest 2-8-0 type of freight engines were required to work it; but with the further increase just mentioned the fact had to be recognised that this already overburdened section of line could not be expected to do more than it was already doing. Two additional routes were accordingly arranged. Some of the trains were to be worked regularly from South Wales viâ Cardiff (Great Western) to Gloucester, while others would go by the Brecon and Merthyr Railway to Talyllyn, there pass on to the Cambrian Line, and so continue to Gobowen, where they would be taken over by the Great Western for conveyance to Chester *en route* for Warrington and the further destinations as already told.

The further increase brought about, in the first few weeks of 1918, in the volume of the coal supplies to be forwarded rendered necessary the provision of greater local transport facilities.

Under peace-time conditions, practically the whole of the traffic went to South Wales ports to be conveyed thence by sea to the Fleet. Owing to the difficulties experienced in regard to coastwise shipment, on account of the war, the coal had now to be forwarded by rail; and, although this change in procedure led to a saving of tonnage at a time when such a saving was of great advantage, it also meant that the siding accommodation at exchange points between the Taff Vale system, on which most of the traffic originated, and the Great Western system, to which it was to be transferred, was hopelessly inadequate for dealing with an amount of business far in excess of what had been provided for there and of what had ever been contemplated. This inadequacy was especially marked at Quaker's Yard, the principal point of exchange; and unfortunately the physical conditions at that point were such as to allow of only a slight increase in siding capacity. There was, however, the possibility of making supplementary arrangements in other directions. The Great Western Railway Company accordingly proposed to the Admiralty that the additional siding capacity required exclusively for dealing with Government traffic should be provided (at the Government expense), alike at Quaker's Yard, at Pontypool Road and at two other points on the Great Western system, while the Taff Vale Company put forward a similar proposal in respect to new works on their own line at Stormstown, near Pontypridd. The proposals, regarded as matters of exceptional urgency, were dealt with and approved by the War Cabinet, and the works were duly carried out, those at Stormstown, however, not being completed until the signing of the Armistice.

The total number of special trains run from South Wales with Admiralty coal between August 27th, 1914, and December 31st, 1918, was 13,631. Taking an average of forty wagons per train, this was equal to 545,240 wagons, and, allowing an average of ten tons per wagon, an approximate total of 5,452,400 tons of coal. These figures are exclusive of 8,161 trains of empty wagons run during the same period from the ports to the collieries; though when the shortage of rolling stock became especially acute, use was made of many of the Admiralty coal wagons for the transport of return loads over certain routes.

On several occasions the number of coal specials sent from South Wales to Grangemouth in a single week was 114. There were days when nineteen special trains, conveying approximately 7,600 tons of coal, were run; but in November, 1918, the consignments dispatched on a single day attained a total of over 14,000 tons. The largest quantity of coal dispatched from South Wales to Grangemouth in any one week was just over 56,000 tons. During the period from March 11th to March 20th, 1918, the consignments of coal from South Wales to all points on Admiralty account amounted to 115,652 tons.

Generally speaking, the time taken on the journey from Pontypool Road to Grangemouth was less than forty-eight hours. Admiralty officers speak in terms of the highest praise of the way in which the traffic was handled by the railways.

From the outbreak of the war to March 31st, 1919, Admiralty coal was carried "free" by the railway companies under the terms of the Government guarantee, without any charges being raised; and during this period—or, to be strictly correct, down to March 29th, 1919—the quantities so conveyed by rail to different destinations were: Grangemouth, 2,346,879 tons; Immingham, 851,890 tons; Glasgow, 717,459 tons; Tyne Ports, 488,008 tons; Burntisland, 309,290 tons; Leith, 482,161 tons; Hull, 13,681 tons; other East Coast Ports, 59,607 tons; Southampton, 283,353 tons; Birkenhead, 302,522 tons; Gosport, 213,224 tons; Devonport, 109,645 tons; Holyhead, 76,265 tons; the Thames, 316,721 tons; Chatham, 36,201 tons, and smaller quantities to other places. From April 1st, 1919, the value of the coal-transport services thus rendered by the railways was, under a new arrangement applying to Government departments in general, assessed by the Railway Clearing House on the basis of the rates that would have had to be paid under ordinary conditions, and were then debited against the Admiralty. This was done until March 31st, 1920, from which date there was a reversion to pre-war conditions, though subject to the increased charges introduced on January 1st of that year. As an indication of what the "free" services rendered by the railways to the Admiralty in respect to their coal traffic during the war-period had represented in terms of actual cash, it may be mentioned that the quantity of coal conveyed between April 1st, 1919, and December 31st, 1919, amounted to 187,709 tons, which would represent a debit of approximately £85,419.

The fact that so great a traffic was run day by day, at practically time-table timings and for more than four years, over some of the principal trunk lines of Wales, England and Scotland when immense volumes of other urgent war-traffic were also being poured in upon these already-heavily-occupied lines, and when, also, the available resources of the railway companies in staff and engine power were steadily decreasing, constituted a remarkable achievement and one that might be regarded as establishing in itself the efficiency of the British railway system. Yet that efficiency becomes still more pronounced when one learns that the 13,630 war-period coal-specials were run from South Wales to destination without any serious interruption on any one occasion. It was, indeed, having regard to all the circumstances and conditions of the time, a big undertaking; but the British Fleet never once had to wait for its coal.

Rail Transport of Mines.

The German naval authorities were, in the early days of the war, distinctly ahead of the British in regard to mines. They not only controlled larger supplies, but the mines they had were of a superior type to our own. Nor did they hesitate to make the fullest use, under the most unscrupulous conditions, of the advantages they thus possessed. In a declaration issued by the Admiralty under date November 2nd, 1914, it was said:—

During the past week the Germans have scattered mines indiscriminately in open sea on the main trade route from America to Liverpool viâ the north of Ireland. Peaceful merchant ships have already been blown up with loss of life by this agency. . . . These mines cannot have been laid by any German ship of war. They have been laid by some merchant vessel flying a neutral flag which has come along the trade route as if for the purpose of peaceful commerce; and, while profiting to the full by the immunity enjoyed by merchant ships, has wantonly and recklessly endangered the lives of all who travel on the sea, regardless of whether they are friend or foe, civilian or military, in character.

It was accordingly announced that thenceforward the whole of the North Sea was to be considered a military area, and merchant and fishing vessels were warned against entering this area except in strict accordance with Admiralty directions.

As the dangers of the German mine-laying practices increased, and still more so as the enemy submarine peril became intensified, further protective measures had to be adopted. Then a greatly improved pattern was introduced, the Americans joined their mine-production and mine-laying forces to those of the British and the great task of constructing the Northern Barrage was undertaken.

The policy adopted was thus described, under the heading of "The Submarine War," in the official publication entitled "The War Cabinet: Report for 1918":—

It was recognised that the most effective way of dealing with the submarines was to attack them from the moment of their leaving their bases; and, secondly, to prevent, if possible, their leaving the North Sea.

Towards effecting this a mining policy was introduced in 1917, having for its objects (1) the systematic mining of the Heligoland Bight to prevent the submarines from leaving their bases by that route, and (2) the sealing up of the exits from the North Sea.

With regard to (1) a dangerous area was formed right across the approaches to the Heligoland Bight. . . .

As regards (2), the first step was to block the Straits of Dover, as it was recognised that while safe passage through this channel could be made by submarines, they were on the whole unlikely to use the longer route. The Straits were eventually closed by broad mine-fields extending from the British to the French coasts.

To deal with the northern exit in the same manner was a more difficult problem since, whereas the Dover Straits are only twenty miles wide, the distance between the Orkneys and Norway is some two hundred miles; but the arrival of a large squadron of United States mine-layers made it a practicable proposition and the work was nearing completion when the Armistice was signed. The rapid progress of the work was largely due to the mines and mine-layers provided by America.

How America co-operated in the task as regards the Northern Barrage will be told later on; but here the fact may be recorded that the part which the British Navy took more especially in what was done in the North Sea led to an enormous increase in the production in this country of mines to be laid by our own Fleet and, in turn, to a corresponding increase in the traffic in war materials already being carried on the British railways.

Without attempting to give any technical description of these mines, it may suffice for present purposes to say that the complete article

consisted of (1) the mine proper, (2) the sinker, designed to keep the mine at the proper depth, and (3) components. The railway traffic in connection with their manufacture comprised, in the first instance, the conveyance of raw materials, under the three categories, to factories and workshops all over the country where the initial work was done. Then the "shell" of the mine—if it may be so described—had to be taken from the steel, boiler or other works where it had been made to the filling factory where it was "charged." This done, the charged mine was taken to one of three mining depôts set up at Portsmouth (Bedenham), Immingham and Grangemouth respectively. Portsmouth was designed to serve factories in the southern counties, Immingham those in the Midlands, and Grangemouth those in the northern counties and Scotland; though Grangemouth also became the base from which most of the mines supplied for the British operations in the North Sea were shipped. At these depôts there were received, not alone the charged mines but the sinkers and the components, and the business of the staffs employed there was to subject the parts to various tests (for strength of materials, watertightness, correct functioning, etc.), "assemble" them and form them into complete units. Mines and sinkers thus linked together were technically described as "married." Having attained to this condition, those at Portsmouth or Immingham which were designed for mining operations in the North Sea to be conducted from Grangemouth were sent off by train either direct to that port or to some intermediate store where they might have to remain until Grangemouth could receive them. At Grangemouth there was a further testing and overhauling of the assembled units before they were issued to the mine-layers.

Large quantities of depth charges were also conveyed by rail to and from the mining depôts.

From Portsmouth and Immingham the traffic in "assembled" British mines of the new type began to flow to Grangemouth in December, 1917. A through special train from Portsmouth consisting of, as a rule, thirty wagons, each containing, on an average, eight mines, was dispatched twice weekly, viâ the London and South Western, the Great Western, the London and North Western and the Caledonian. Similar trains, though with about fifty-six wagons each, went to Grangemouth twice a week, for a short period, viâ the Great Central, the North Eastern and the North British.

The proportions attained by the traffic may be judged from the statement made at Ottawa in November, 1919, by Lord Jellicoe who, in a speech delivered at the Canadian Club in that city, said that in 1918 the production of British mines amounted to 8,000 per month. From a railway point of view, however, and bearing in mind the facts already stated, this output of 8,000 completed mines per month meant the handling of the traffic, in one or other of the various stages of manufacture, many times over by practically all the railway companies in Great Britain, except as regards the purely passenger lines.

Supplies of mines and sinkers were received at the depôts by rail not only with great regularity but in such quantities—often about 100 wagon loads a day—as were in excess of the number of assembled units which could be issued concurrently. The actual laying of mines depended on various conditions, such as weather, moonlight and the tactical situation, and there were occasions when the available supplies were much in excess of immediate requirements. It was under these conditions that in addition to all that was being done in the way of rail transport, large quantities of unassembled units were stored from time to time by certain of the railway companies.

As a matter of national importance the North Eastern Railway Company were asked in December, 1917, to arrange for the storage of 50,000 sinkers until these, with their mines, were ready for putting into the sea. Facilities for storage were provided by the company at Darlington, West Hartlepool, and Scarborough, and arrangements were made not only for the handling and storage of the sinkers but for their examination on arrival and the keeping of a check. The sinkers came from various makers throughout the country. After being stored they could only be removed on a warrant from the Admiralty. The stores were, therefore, in the nature of bonds. Records showing senders' name and registered number of all sinkers received were kept on behalf of the Admiralty. The company's representatives also signed the senders' receipts and furnished the Admiralty with statements showing the number of sinkers received weekly, number on hand, etc.

The sinkers were provided with small wheels intended for running off the shooting boards when the mines were being laid. Great care had to be taken to avoid damaging these wheels, and the weight of the mine was taken off them during storage by the use of oak scantling framework.

Some details as to the nature of the storage services rendered at the places mentioned may be of interest as showing the nature of the further duties undertaken by the railways in connection with the matter :—

At Darlington the sinkers were stored in a paint shop attached to the N.E.R. Loco. Works (Stooperdale). The first of them were received in December, 1917, and the last were dispatched in March, 1919. The total number handled during that period was 13,420. The sinkers weighed, approximately, 8 cwts each. They were at first slung up by means of a steam travelling-crane and lifted out of the wagons direct on to the stack ; but as the stack grew in size it was found necessary to take the sinkers out of the wagons before entering the shop and they were then transported along a temporary run-way, known as " Jerusalem rails."

At West Hartlepool accommodation was afforded for 13,000 sinkers, space being reserved on the ground floors of two warehouses and on the first and second floors of one of the warehouses. The sinkers began to arrive in December, 1917, and the stock was finally cleared in February, 1920. During this period a total of 14,233 sinkers were dealt with. The largest number on hand at one time was 13,187. Special gear on the block and tackle principle had to be installed for stacking on the ground floors. The difficulty of stacking on the upper floors was overcome by the erection of outside platforms on each floor and the use of the dockside electric

cranes for lifting. Portable rails were fixed between these temporary stages and the stacks.

At Scarborough, passenger traffic was very light during the war period, and it was found possible to use the cab-stand and one of the platforms for storage. The sinkers began to arrive at the end of January, 1918, and were dealt with by a gang of seven men. By the middle of June, 1918, there had been received 5,132 sinkers, and these, it was found, took up all the available space. Use was made of 462 wagons to convey the sinkers to Scarborough. None of the sinkers were removed during the war, but on March 24th, 1919, the Admiralty ordered their removal to depôts, the last being dispatched on May 29th. For the purpose of stacking, a special swivel crane had to be rigged up.

Storage of mine-sinkers on behalf of the Admiralty was also undertaken by the Lancashire and Yorkshire Railway Company in their Beverley Shed at Goole.

The mine-sinkers were received there from Littlemore (Great Western), Lincoln and Grantham (Great Northern), and Calverley and Rodley (Midland), and the total number coming to hand between April 23rd, 1918, and June 26th, 1918, was 2,950. Their total weight was about 1,400 tons. Over 300 wagons were used in their conveyance. The wagons were run into the shed and the sinkers were removed from them—or placed back on to them, on their subsequent dispatch elsewhere—by means of overhead electric cranes.

Conveyance of Heavy Guns.

Among the many transport problems which arose for solution within a very short time of the outbreak of hostilities was one that related to the conveyance of big guns by rail, and more especially of heavy naval guns having a weight of fifty tons or more, as distinct from military guns which were generally of a lighter type than those used in the sister service.

A few "sets" of trucks specially constructed for the carriage of guns having a weight up to about 100 tons were already owned by railway companies who required to deal with the conveyance of this class of traffic; but these were not likely to be sufficient for the purposes of a great war. Companies serving the industrial districts of England and Scotland also had a considerable number of heavy-capacity wagons which, in regular use for the transport of armour plate, large boilers, etc., could be converted into improvised "gun-sets," each consisting of three or four vehicles. Even, however, of trucks capable of being so adapted the supply was not unlimited.

Towards the middle of 1915, the gun-sets, proper or improvised, were in great demand among contractors employed in making or repairing heavy guns as well as among officers in charge of Naval Ordnance Depôts and there was every prospect that the movement of big guns would soon be increased. Down to this time the firms or the Government officials concerned had made their arrangements direct with the railway companies; but it was now thought desirable to adopt such measures as would ensure the best use being made of such vehicles as were capable of being employed for the purpose in question. It was thus arranged

that all applications for trucks desired for the conveyance of heavy guns weighing fifty tons and over should be made in the first instance to the Royal Naval Ordnance Depôt, Royal Arsenal, Woolwich, which depôt would be in a position to assess the relative urgency of requests for the supply of trucks. Having so decided, the depôt was next to inform the Railway Executive Committee as to the requirements to be met, giving them, so far as this could be done, the dates by which the trucks would be wanted or by which the guns should arrive at their destination. It would then be for the Executive Committee to arrange for the dispatch of the trucks to the forwarding company, informing them and the department when they might be expected.

From this time all gun-sets or wagons capable of forming them were controlled by the Railway Executive Committee, and a scheme for the working of the traffic on a well-organised basis was brought into effect. Assuming, for instance, that a telegram or a telephone message should be received at the Executive Committee's offices from the Naval Ordnance Depôt at Woolwich to the effect that trucks were required for the conveyance of a 100-ton gun from Devonport to Rosyth, it would be the duty of the clerk in charge to allocate a suitable set of vehicles for the purpose, give the necessary instructions for their being forwarded, and exercise discretion in making sure that the vehicles he selected would be able to pass over the private sidings of firms wanting them or could otherwise travel by the route they would have to go. A special book in which were recorded the movements of the sets and their location when available for further use was kept, and a glance therein would show from what source a set of trucks could be procured—provided there was not one already available, as was sometimes the case, at the starting point. By means of one or two telephone messages, the needful arrangements would at once be made; though it was possible that, before they were carried into effect, the occasion might arise for giving additional instructions so that a return load could be taken up on the way back. The ultimate record might thus read as follows :—

Owning Company. No. of Wagons in Set. Capacity.	From	To	Date	Weight of Gun Conveyed.
Great Central Four (Nos. 1673, etc.) 100 tons	Devonport	Rosyth	Aug. 5, 1918	100 tons
	Rosyth	Sheffield	,, 12, ,,	Empty
	Sheffield	Woolwich	,, 15, ,,	90 tons

In the case of about four sets of wagons, the Admiralty paid a retaining fee to the owning company in order that they might have the exclusive use of the vehicles.

Requests for wagons to convey naval guns weighing less than fifty tons continued to be made direct to the railway companies.

As time went on the ever-increasing demands for the heavy-capacity wagons necessary to the making up of improvised gun-sets subjected some of the railway companies to considerable inconvenience owing to the withdrawal of those wagons from their normal use in the conveyance

of articles of abnormal weight and dimensions in connection with steelworks manufactures. It was thus found expedient to increase the number of gun-sets provided expressly for the purpose of conveying heavy guns, this course being adopted with a view to releasing more of the heavy-capacity wagons as well as for the purpose of making better provision for naval guns of the enormous weight and size then in course of production, with the prospect of further developments to follow. It was under these conditions that the London and North Western acquired a special gun-set, constructed by Hurst, Nelson & Co., Ltd., of Motherwell, for the conveyance of heavy guns up to a weight of 160 tons.

Then the position in Scotland became so urgent that the Railway Executive Committee obtained for the Caledonian Railway Company from the Admiralty, who were to bear the expense, authority to order from the same firm at Motherwell a gun-set equal to the conveyance of heavy guns up to a weight of 165 tons.[1] By special arrangement, this particular gun-set was to remain at the service of the Caledonian Company and not to be dispatched to any Government depôt. Delivered in May, 1918, it rendered good service between that date and the signing of the Armistice in carrying guns up to 100 tons in weight; but the occasion did not arise during this period for using it to transport guns in excess of 100 tons. There were eight of the principal railways over which, on account of the weight of the load and the sharp curves, a gun-set carrying a gun of 160 tons could not have travelled, though, save for the usual restrictions as to speed, their lines were fully equal to a gun of 100 tons.

Admiralty Propeller Traffic.

Speedy replacement of propellers, on account either of damage or of wear and tear, was often a matter of great importance to H.M. ships, while, for the reasons stated at the outset of the present Chapter, dispatch of a new propeller by passenger train might be indispensable. Owing, however, to their bulky size and awkward shape, the sending of propellers by rail involved the provision of special trucks, and the already heavy demands upon the railway companies for vehicles of the particular type required considerably increased during the war. In these circumstances the Admiralty thought it advisable to secure a supply of trucks for themselves, and the construction for them of five

[1] Gun-sets of the type of those built for the London and North Western and the Caledonian consisted of three six-wheeled bogie wagons, two of which were close-coupled and carried between them a bolster designed to support the breech of the gun, while the third wagon, on which the muzzle would rest, was coupled to the two others by means of a long drawbar capable of being extended or shortened according to the length of the gun to be carried. The saddles for the breech and muzzle, the end bearings of the breech bolster and the couplings between the wagons were so arranged as to permit of the gun-set taking a curve of 1½ chains. When shorter and lighter guns were carried, the breech wagons and the muzzle wagon could be brought closer together by the substitution of a shorter drawbar for the long one. The saddle for the muzzle could also be adjusted to almost any point along the full extent of the wagon. When not required as a gun-set, the three wagons could be used as separate units, each being capable of carrying from 55 to 60 tons.

specially designed for the conveyance of propellers, and suitable for working on passenger trains, was undertaken by the North Eastern Railway Company.

The propellers were stored at Carlisle, Leeds, Newcastle and, also, at H.M. Dockyards; and, when required, they could, with the help of the special trucks now always available, be delivered with a minimum of delay to the ships requiring them, the refitting of the vessels being thus facilitated. The new arrangement had the additional advantage of affording much relief to the railway companies, having regard, more especially, to the considerable extent and invariable urgency of the traffic.

Oil Fuel.

As the war progressed, the demands for oil fuel for oil-burning ships became steadily greater and more urgent. Distribution of supplies took place mainly from the oil-fuel depôts at Killingholme, near Immingham, and the Thames Haven, near Tilbury. Flotillas of destroyers might come to any port along our coasts for fresh supplies of fuel wanted by them with all possible dispatch. So provision had to be made for sending off the oil at any moment and in any direction in which it might be wanted, the traffic being generally more or less spasmodic.

Unfortunately the Admiralty did not own, at the outset of the war, a single oil-tank railway-wagon, and there were comparatively few in the country. They accordingly adopted the combined expedient of hiring and building. They hired between 250 and 300 from the oil companies, and they started building with the advantage of being able to secure priority for the materials they wanted. By the adoption of these two methods they had managed to get together about 400 by the time the Armistice was signed. Even this number would have been inadequate but for the very good relations between the Admiralty Rail Transport Department and the railway companies. When the supply of wagons could not be increased at the rate desired, the efficiency of those available was more than doubled by the way in which they were used. The traffic often went in complete train loads; the special trains by which it was conveyed travelled at almost express speed; the wagons, on arrival, were unloaded without a moment's avoidable delay, and the empties returned with a promptness and at a speed only to be compared with the dispatch and the transport of the full loads.

The assistance thus rendered by the railway companies was declared to have been much more than simply a considerable help. It was on many occasions of invaluable service in facilitating the work of the Navy at sea.

Stores by Collier.

From quite the early days of the war difficulties began to be experienced in finding a sufficiency of shipping for the dispatch overseas of the great quantities of naval, military and other stores which were required in

various parts of the world, and more especially in and around the Mediterranean. Concurrently therewith an enormous number of colliers were being sent from Cardiff to such ports as Gibraltar, Malta and Port Said, and the idea was mooted at the Admiralty as to whether or not, in order to economise shipping, these colliers could not be further utilised by forwarding the said stores along with the coal.

Inquiry showed that the proposal was quite practicable, and it was arranged that all freight requisitions in respect to Government stores which were made upon the Director of Transports and Shipping (then an Admiralty man) should be supplied in duplicate in order that one copy could be sent on to the Naval Store Department of the Admiralty. This department was to see if accommodation for the stores to which a particular requisition referred could be found on an outgoing collier. If so, instructions were given that the consignments should be forwarded to Cardiff. If not, it was left for the Director of Transports and Shipping (or the Ministry of Shipping, by which he was succeeded) to do what was possible to secure space on ordinary freight ships. These arrangements were of great advantage alike to the Navy, to the Army and to the Air Forces.

Stores of all descriptions were conveyed on the Great Western Railway in substantial quantities to Cardiff for transport overseas by Admiralty colliers. There were occasions when as many as 500 truck-loads of stores would be awaiting shipment, and when, also, from six to ten aeroplanes in cases would be put on the decks of outgoing colliers. Everything, in fact, that could be sent by this means was so forwarded, as far as conditions allowed, and the sum total of the relief to other shipping must have been very considerable.

Naval Personnel.

Rail movements of naval personnel were under the control of the Director of the Admiralty Mobilisation Division.

On p. 110 mention has already been made of the fact that mobilisation of the Naval Reservists who had not been demobilised after the test mobilisation scheme of July 12th–14th, 1914, was effected on August 2nd, and was carried out with perfect smoothness. In regard to subsequent movements of naval forces, the practice usually followed was for the Mobilisation Division to communicate by telephone with the Railway Executive Committee, stating requirements, and the Executive Committee would then give instructions to the companies concerned. When large parties—drafts or crews taking over a new vessel—were to be moved, special time-tables were drawn up and special trains run. The companies would also arrange for the feeding of officers and men, providing, for example, 250 breakfasts, dinners or suppers, or, sometimes, in the case of a long journey, all three, at stations *en route*. The cost of such meals was credited by the companies to their accounts, to be made good by the Government guarantee.

How a Naval Special was run every week-day from February 17th,

1917, to April 30th, 1919, between Euston and Thurso, with subsidiary connections to and from all parts of the country, will be told in detail in a later chapter.

In addition to this daily Naval Train, special naval leave trains were run throughout the war, as required, for ships' companies proceeding on leave from H.M. ships refitting at Invergordon, Rosyth and the Tyne. They were arranged for locally, on the basis, however, of standard timings. From Rosyth Dockyard station they ran to Plymouth, Portsmouth and London. Three timings—morning, afternoon and evening—were available for those to Plymouth and Portsmouth (West Coast route). Naval passengers for either of these destinations travelled by the same train or timing viâ Carlisle and Preston to Crewe, whence those for Plymouth continued their journey through Shrewsbury, Hereford, Pontypool Road, Newport, Bristol and Exeter, while those for Portsmouth proceeded by Stafford, Bushbury, Wolverhampton (Great Western), Birmingham, Banbury, Oxford, Reading and Basingstoke. In the reverse direction there were timings for two trains, morning and evening, from each port, with a connection at Crewe. Between Rosyth and London (East Coast route) there was a choice of three trains in each direction, and the trains called at, among other places, Newcastle, Darlington, York, Doncaster and Peterborough. All three were thus equally available for naval officers and ratings landed at or proceeding to the Tyne ports. Still other leave trains were arranged between Invergordon and London by the East Coast route and between Invergordon and Plymouth and Portsmouth by the West Coast route. Apart from the places directly served, practically every part of England, Wales or Scotland could be reached from the numerous junctions passed through by these leave specials, of which use was made by naval men on a most extensive scale.

There were, again, considerable demands on the railways in connection with the demobilisation of the Naval Forces.

The greatest rate of demobilisation was between the middle of January, 1919, and the end of the following month. The average daily number then dispersed was 2,300, with a maximum on any one day of 3,900. Owing, however, to the arrangement by which demobilisation was carried on from individual ships in whatever port these might be—men proceeding direct home from their ships—the movement was not concentrated on any particular railway lines.

Special trains for the conveyance of demobilised men were run only from Chatham and Devonport to London. Those from Chatham left daily, except Sundays, from January 7th, 1919, to February 24th, 1919. The average number carried per train was 265. From Devonport the special trains left every week-day from January 1st to March 24th, between which date and June 12th thirty-one further trains were run as required.

CHAPTER XXXIV.

THE GATEWAY TO THE NORTH.

WITHIN a fortnight of the declaration of war, the condition of things at Inverness—the capital of the Highlands and the gateway through which all passenger-train traffic, at least, for the Grand Fleet in the Far North of the British Isles had to go—was rapidly drifting into a state of chaos owing to a lack, at that time, of any efficient organisation for the control and regulation of the traffic arriving there, or to be distributed thence, on Admiralty account. Ratings were being stranded in considerable numbers; guidance and direction were lacking; hundreds—if not thousands—of bags of mails were accumulating; there was no one in the town who, acting on behalf of the Admiralty, had sufficient power and inner knowledge or authority to set right the things that were going wrong, whilst railway lines possessing strictly limited transport facilities were struggling desperately to deal with greater volumes of business than, even allowing for what was being left behind, it was possible for them to handle.

So it was that on August 19th, 1914, the Admiralty sent to Inverness a representative who was to undertake there the combined duties of Senior Naval Officer and Divisional Naval Transport Officer, Inverness itself becoming, concurrently therewith, a British Naval Base and the centre from which the whole of the personnel and all the mails for the Grand Fleet—as distinct, however, from stores and general supplies—were to be distributed, though many other duties, in addition, were undertaken subsequently. In this way there was begun at Inverness an organisation which eventually comprised a permanent staff of about seventy officers, between 300 and 400 male workers, and 120 members of the Women's Royal Naval Service, of whom the last-mentioned engaged in a wide range of duties—clerical work, motor transport, the cleaning of barracks, and so on. Ultimately, when the organisation was complete, two hotels had been taken over for the accommodation of staff officers; a third hotel and a college were converted into naval barracks for ratings passing through Inverness, and a private house was acquired for officers, with still another hotel for the rank and file, of the W.R.N.S. A fleet of lighters, drifters, etc., was also acquired for naval transport purposes.

Operating under the direction of Captain H. F. J. Rowley, C.B.E., R.N., of the Royal National Lifeboat Institution, the organisation practically took charge of all Admiralty interests—apart from goods traffic and naval ambulance train traffic—arising directly or indirectly either in Inverness

itself or to the north thereof. It was, among other things, often not until they arrived at Inverness that officers and ratings knew the locality of the ship they were to join. The Senior Naval Officer received hundreds of telegrams every day dealing with the movements of vessels belonging to the Fleet, but the information was, for obvious reasons, jealously guarded, and was not imparted even to naval men until the need for so doing arose. Thus it became a not infrequent occurrence for an officer or a rating to present himself to the Senior Naval Officer at Inverness under conditions which would lead to a conversation such as this : "I want to join my ship, the ——. Can you tell me where she is ? " " She is at Portsmouth." " But I have just come from there ! " " Then you must go back." And back the inquirer would have to go.

It was due to the initiative and the persistent efforts of the Senior Naval Officer at Inverness that the Euston-Thurso naval special, of which an account will be given in a later chapter, was started. The same officer was responsible for the arrangements in connection with the transport of the American mines conveyed through the Caledonian Canal from Fort William to Inverness, where they were handed over to the American authorities and so taken out to the North Sea.

Under the arrangements made, Inverness became a distributing centre of the Naval Post Office for mails and parcels to or from the Grand Fleet. A specially-built shed on the railway station premises, and, also, part of a laundry building belonging to the Station Hotel were utilised for the purpose.

In the first instance, mails sent from London for the Grand Fleet remained undisturbed on the train to the North until Perth was reached. There a Post Office sorting-coach was put on, and between Perth and Inverness the officials in charge sorted out the mails into bags labelled with the names of the ships to which their contents were to go. Later on the sorting-coach was attached to the train at Edinburgh, instead of at Perth. When the mail bags—to the number of anything from 300 or 400 up to 1,000 by a single train—arrived at Inverness, fresh bags for the post offices at various naval bases were made up and numbered according to a key list which gave the actual location at that moment of the ships concerned ; though this list, compiled on the basis of the latest telegrams or wireless messages received by the Senior Naval Officer at Inverness, was known to two persons only. From the naval bases the bags would be sent to the ships concerned. The number of ships, ranging from men-of-war to the humblest auxiliary vessel, to which the mails were forwarded was between 1,800 and 1,900, and the dispatch of letters to them might involve as much trouble in the case of a drifter as in that of a battleship.

Inverness further became a centre for the distribution of ammunition among the Grand Fleet, the shipment thereof being facilitated by the construction—under circumstances which must have been almost unique in their way—of a new branch line between Inverness Railway Station and the existing sidings at the harbour. (See map on p. 538.)

Early in 1915, inquiries were made of the Highland Railway Company as to the possibility of their building the said line for the purposes of Admiralty traffic, the length of time it would take, and so on. The reply given was that there would be no difficulty in the way of their carrying out the work, and that, inasmuch as men were then available, the line could be made in six weeks—provided the order for it were given at once. Nothing more was heard of the proposal for some time, and the men in question had, in the meanwhile, been sent to various parts of the Highland system to undertake other work which required to be done. Then, without a word of further warning, a message was received one day in May, 1915, that the branch must be constructed at once, that the matter was one of extreme urgency, and that more than one train-load of ammunition to be taken along the branch *had already been dispatched from the South.*

If the engineering staff protested, their protests were not surprising. The work would involve, not only the laying of 1,000 yards of railway, with five points and crossings, but the removal of two large buildings which then blocked the way. How was all this to be done by the time the ammunition trains arrived at Inverness from the South—even allowing for a few possible detentions *en route.* There would hardly be a chance to get the men together, scattered as they were !

The work, however, *had* to be done, and a staff of railway platelayers was collected from Sutherlandshire and set to work, assisted by about 100 men sent in daily from a Royal Engineer Corps at Fort George. Under these conditions the Engineer-in-Chief of the Highland Railway undertook to carry out the task in a fortnight, and he kept his promise. The line was so far completed that the first of the waiting ammunition trains was run over it within ten days.

Ammunition for the Grand Fleet thenceforward arrived at Inverness by rail from factories in the South of Scotland and all parts of England. So the Senior Naval Officer had the further responsibility of arranging for the transhipment of the ammunition from wagons on the railway sidings into carriers awaiting it in the harbour for conveyance direct to the ships for which it was intended. All this work was carried on within a military-guarded barbed-wire enclosure.

In the reverse direction the new branch line was of service in the conveyance of material sent ashore for repair or otherwise.

Although the Admiralty did not actually take over Inverness Harbour, it had first call upon all the transport or other facilities available there, and so, to all intents and purposes, controlled the situation.

Seaward of the harbour proper, and on the opposite side of the river, is Thornbush Quay. The quay has no railway connection ; but, inasmuch as it adjoins the Rose Street Foundry shipway, where the smaller Admiralty craft were being built and repaired, it, also, was made use of on Government account. In a disused brewery building alongside the young ladies of Inverness, who had patriotically offered their services for the purpose, were initiated into the art of wire-splicing on steel hawsers.

In the railway goods-yards at Inverness additional sidings were provided for the trains of ammunition, boom-defence materials, anchors, cables, buoys, machinery, etc., coming forward faster than they could be handled, and overflowing on to the quay. The sidings were afterwards added to from time to time to meet the still greater needs which arose.

One of the carriage sidings was the headquarters of Naval Ambulance Train No. 4.

The total amount of Admiralty goods traffic dealt with in the station, harbour and sidings at Inverness between August, 1914, and June, 1919, was 123,683 tons. In addition to this a large traffic was carried on behalf of private contractors.

The Highland Railway Company's Station Hotel at Inverness was the scene of much activity throughout the war. When, prior to the provision of the naval barracks mentioned above, 100 or 150 naval ratings arriving at Inverness by rail late at night found that the last train to their further destination had left, the Station Hotel would take them in and give them mattresses or shakedowns on the floor. Officers and men on draft travelling by the Naval Special, and breaking their journey at Inverness for half an hour, had, as will be told more fully later on, a meal in the hotel. Sometimes, with the addition of shipwrecked or torpedoed seamen, or crews of captured German vessels, the number so entertained in a day would be close on 1,000. Only very short notice would often be given, and big stores of food had to be kept on hand. In the hotel laundry great quantities of blankets, etc., were washed for the Admiralty.

The Station Hotel had, also, in the early days of the war, the patronage of alien spies. They may, indeed, well have regarded Inverness and its Station Hotel as especially promising fields for inquiring minds. Two of them, a man and a woman, were arrested through the shrewdness of the hotel staff, who, though working tremendously hard, managed to keep their eyes and ears open. The two were taken to London for trial, and some of the staff went to London to give evidence against them. In the result, the man ended his career in the Tower, and the woman was sentenced to penal servitude for life. Altogether seven spies were arrested, and five of them suffered the extreme penalty.

It was, no doubt, owing to experiences such as these that, in August, 1916, the North of Scotland, comprising Inverness and all stations on the Highland Railway beyond Inverness was, under the provisions of Defence of the Realm Regulation 29B, declared a Special Military Area. Railway passengers who arrived without having first provided themselves with an official " permit," or who failed either to establish their identity or to show that they had legitimate reasons for coming to Inverness, were not allowed to leave the station. In the same way every naval officer, every rating and every civilian going to the Grand Fleet had to be " identified " to the satisfaction of the Senior Naval Officer's staff before they could proceed further on their journey. Local residents, too, were required to have their permits, and they had to produce them on demand whenever they walked about. All civilians were free to leave Inverness

to go South, but none could enter it from North or South, by road or rail, without undergoing a rigorous examination. Too much was going on in Inverness, and North of Inverness, to allow of any risks being run, and even officers of the Highland Railway felt inclined to be grateful if—after showing their permits—they were allowed to call their souls their own.

CHAPTER XXXV.

THE EUSTON-THURSO NAVAL SPECIAL.

FOLLOWING on the adoption of the eastern and northern shores of Scotland, together with the Orkney Islands, as naval bases for various sections of the British Fleet, there was from the very outset of the war a heavy, and, for a considerable period, steadily-increasing, transport from and to London and elsewhere of naval officers and men, imposing, at times—having regard to all that required to be done in other directions—much additional strain upon the traffic facilities of the railway companies.

This naval traffic was naturally irregular, according to Fleet movements, leave, or other conditions. Attempts were first made to spread the traffic from London over a number of trains in the course of the day or night; but the arrangement had its disadvantages from a traffic point of view, as, also, had the absence of properly co-ordinated services, to or from various parts of the country, working in conjunction with the London trains.

Nor were the drawbacks of this lack of effective organisation felt by the railway companies alone. The results on the naval ratings had also to be taken into account. The men often found the trains crowded, and they became discontented because of the discomforts they experienced. There were constant altercations between themselves and civilians; for lack of guidance and supervision, they missed their train connections; they got stranded at towns or junctions *en route*; they drifted into bad company; they became absentees from their ships, and the whole position, in fact, bordered very closely on actual chaos.

It was this combination of circumstances that led to the idea of a special Naval Train which, running between Euston and Thurso every weekday, in each direction, with regular connections by ordinary train services from or to all other places in the kingdom concerned in naval passenger traffic, would not only become an established highway for this traffic from one end of the country to the other, and facilitate the operation of the railways, but, by affording the means of maintaining discipline and of keeping a watchful guard over the men throughout the journey, would reduce to a minimum the possibility of their getting into trouble or difficulty between home and ships in whichever direction they were travelling. Such regular daily train, run under well-organised conditions, would avoid the overcrowding of ordinary trains or the need to put on impromptu specials when more men turned up at the

stations than had been anticipated; greater comfort in travelling alike for naval ratings and for the general public would be assured; improved arrangements could be made for feeding the men; bags and luggage would be less liable to damage or loss, and the return of the men to their ships at the appointed time would be better assured. There would, in fact, be a gain all round.

It must be confessed that, at the outset, the idea seemed to be impracticable; but the difficulties which presented themselves were surmounted, and February 15th, 1917, saw the introduction of a Naval Train which, running regularly between Euston and Thurso, the starting point at the extreme north of Scotland for the sea journey to Scapa Flow, was to be used exclusively for naval men, with certain exceptions. This meant a through journey of no less than 717 miles.

For a short period the train ran from Carlisle to Perth, viâ the Caledonian Railway, without a stop, men for the Rosyth Dockyard or for the Firth of Forth having to be worked back from Perth to Rosyth. On and from May 21st, 1917, this arrangement was altered in favour of one by which the train was taken on from Carlisle by the North British Railway Company's "Waverley" route, viâ Hawick and Galashiels, to Edinburgh (Waverley Station), and thence viâ Queensferry, the Forth Bridge and Inverkeithing Junction to Perth. At Inverkeithing the Admiralty line for Rosyth connects with the main lines of the North British alike to Perth and to Aberdeen, and a portion of the train with men for ships in the Firth of Forth was left off there, the doubling back from Perth to Rosyth thus being avoided.

In the summer months the time of departure from Euston was 6. p.m. and the train was due to reach Thurso at 3.30 p.m. the following day, 21½ hours being thus allowed for the run of 717 miles. In the reverse direction the train left Thurso at 11.45 a.m., and was timed to reach Euston at 10.5 a.m. the following morning—a journey of 22 hours 20 minutes.

Euston itself was a collecting centre, on the down journey, not alone for naval men in London, but for others arriving there by ordinary train services from Harwich, Tilbury, Chatham, Dover, Brighton, Portsmouth and Southampton. Other contingents, also starting by ordinary trains, joined the Naval Train *en route*. Officers and ratings from Plymouth, Devonport and Keyham Dockyards left Plymouth (Millbay) at 11.30 a.m. by an express which picked up others at Exeter, Bristol, Pontypool Road (serving Cardiff and Barry) and Shrewsbury (serving Milford Haven), and reached Crewe at 7.30 p.m., 1 hour and 38 minutes in advance of the Naval Train, which made its first stop there (at 9.8 p.m.) after leaving Euston.

Ratings from Ireland and Birkenhead also joined at Crewe. Those from Liverpool travelled over the Lancashire and Yorkshire Railway to Preston, the next stop for the Thurso Special after Crewe. A dispatch-bearer with dispatches from Liverpool also joined at Preston. From this point there was no further stop until Carlisle was reached. To Carlisle

ROUTE OF THE
EUSTON-THURSO NAVAL SPECIAL
AND ITS CONNECTIONS
Ran every week-day from Feb 15th 1917 to April 30th 1919. Carried 470,000 passengers.
DISTANCES.
EUSTON TO THURSO 717 MILES.
PLYMOUTH TO THURSO 834 MILES.
Main Route
Connections.
English Miles
0 10 20 30 40 50 60 70 80 90 100
SCAPA
THURSO
DINGWALL
Cromarty
INVERNESS.
Kyle of Lochalsh.
PERTH.
STIRLING
ROSYTH.
EDINBURGH.
CALASHIELS.
Berwick
HAWICK.
CARLISLE
Stranraer
Newcastle.
Barrow
York.
Hull.
PRESTON
Liverpool
Birkenhead
CREWE.
Shrewsbury.
Harwich.
Milford Haven.
Pontypool Road.
Cardiff.
Bristol.
LONDON
(Euston).
Tilbury
Chatham
Dover.
Southampton
Portsmouth
Brighton.
Exeter.
PLYMOUTH.

were worked the contingents from Barrow and West Cumberland, together with those that might have been landed at Stranraer. To Carlisle, also, came a dispatch-bearer from Newcastle in order to join either the down or the up-train. Dispatch-bearers from London also travelled regularly on the train. Ratings from Hull, York and Newcastle went north mainly by the direct route, viâ Berwick and Edinburgh, though some of them travelled viâ Carlisle, joining the special there.

At Perth the train was taken over by the Highland Railway Company for the remainder of the journey. At Inverness there was a certain sorting out and redistribution of drafts, according to latest naval requirements. Men going to Achnasheen or Kyle of Lochalsh for destinations on the West Coast went on from Inverness by ordinary train. Those for ports further north continued their journey by the Naval Train, which made only four stops in the remaining 153 miles between Inverness and Thurso. The first of these was Alness, serving the United States Naval Base at Dalmore, on Cromarty Firth. Three miles farther on the Naval Train stopped at Invergordon, to set down officers for the Fleet at Cromarty. After this came stops at Helmsdale and Forsinard, for locomotive water, and so on to Thurso, the naval base for Scapa Flow.

In the winter months—October 1 to March 2—the train left Euston at 3 p.m., instead of at 6 p.m., in order that the embarkation at Thurso could be completed during the hours of daylight.

The winter time-table was as follows:—

Down-Train.	Arrive.	Leave.
Euston	—	3.0 p.m.
Crewe	6.8 p.m.	6.22 ,,
Preston	7.28 ,,	7.31 ,,
Carlisle	9.33 ,,	9.40 ,,
Hawick	10.52 ,,	11.0 ,,
Edinburgh (Waverley)	12.18 a.m.	12.38 a.m.
Inverkeithing	1.5 ,,	1.11 ,,
Perth (General)	2.12 ,,	2.20 ,,
Inverness	6.40 ,,	7.15 ,,
Alness	8.20 ,,	8.22 ,,
Invergordon	8.29 ,,	8.32 ,,
Thurso	12.45 p.m.	—

Up-Train	Arrive	Leave
Thurso	—	11.45 a.m.
Invergordon	4.25 p.m.	4.28 p.m.
Alness	4.34 ,,	4.37 ,,
Inverness	5.35 ,,	6.5 ,,
Kingussie	—	7.45 ,,
Perth (General)	10.15 ,,	10.25 ,,
Inverkeithing	11.25 ,,	11.35 ,,
Edinburgh (Waverley)	12.4 a.m.	12.31 a.m.
Galashiels	1.27 ,,	1.33 ,,
Carlisle	3.10 ,,	3.20 ,,
Preston	5.24 ,,	5.27 ,,
Crewe	6.33 ,,	6.53 ,,
Euston	10.5 ,,	—

The special generally consisted of fourteen vehicles, though there were occasions when it had to be run in two or even in three portions. Sleeping accommodation was provided for officers. The train consisted entirely of corridor stock, and the Masters-at-Arms who accompanied it and were responsible for the distribution and discipline of the men thus had easy access to all the coaches. Certain of the compartments were, by means of iron bars fixed to the windows and locks on the doors, adapted to the accommodation of naval prisoners who had outstayed

THE EUSTON-THURSO NAVAL SPECIAL AT INVERNESS.

NAVAL MAILS AT INVERNESS.

[*To face p.* 510.

HOISTING THE AMERICAN FLAG AT "U.S. NAVAL BASE 18," INVERNESS.

[*To face p.* 511.

their leave or been guilty of some other offence against naval discipline.

Prior to the running of the Naval Special, it had always been necessary that such prisoners, on being taken back to their ship, should be accompanied by escorts, and it was, at times, necessary to allocate a number of men, in the aggregate, to the discharge of this duty. Under the new arrangements, escorts on the journey were no longer necessary. The prisoners were put into compartments where they would be perfectly secure, and the escorts of earlier days could now be more usefully employed. The number of prisoners per train might be anything up to about thirty-five.

Arrangements had necessarily to be made for feeding the men on so long a journey. On the down journey in summer, for instance, those who joined in London were supplied with tea at Euston before leaving, and had bag suppers served out to them *en route*. Those from the West of England were looked after at Crewe. Inverness was reached at 9.20 a.m., and here the train waited for 35 minutes, during which time a " sit-down " breakfast was provided in the Station Hotel (owned by the Highland Railway Company) for all the officers on the train and for all the men who were on " draft." The latter sometimes numbered as many as 450. When there were more than 250, they were generally put into the coffee-room, the officers and ordinary guests breakfasting elsewhere in the hotel. Otherwise the men were distributed over drawing-room, commercial room, stock-rooms, and so on. How well they were looked after is shown by the fact that on their return to the train they were carefully counted, to ensure that none had been left behind. Bag dinners, also, were distributed at Inverness among the men proceeding thence by ordinary trains to destinations on the west coast. In addition to these " official " meals (arrangements for which were made *en route*, by telephone or otherwise, by the Naval Master-at-Arms travelling on the train), light refreshments were distributed by voluntary workers at Perth and other stations where stoppages were made.

The general arrangements for the return Naval Special, which left Thurso at 11.45 a.m. both summer and winter, corresponded, though in the opposite direction, with those for the down-train, as already narrated, though the stations stopped at varied somewhat. At Inverness officers went into the Station Hotel and had tea at a buffet table in the lounge. When the train arrived in time (5.35 p.m.), they could also get a whisky and soda ; but if they did not reach Inverness until after six they had to be content with either the soda or the tea. Dinner for them was handed into the train at Kingussie. Men on draft were taken into the hotel at Inverness and given a " sit-down " meal under conditions similar to those applying to breakfast on the down journey. Men on leave were not included in the " official " meals.

Perth was reached on the up-journey at about 10.15 p.m., and here there was a ten-minutes' stay, during which time tea, sandwiches, etc., were served out on the platform, as in the case of the down-train in the early hours of the morning, by voluntary workers.

Inasmuch as the up-train was not due to arrive at Edinburgh (Waverley) until 12.4 a.m., when all connections by the East Coast route with Newcastle, Hull, etc., had left for the day, men for these destinations went on to Carlisle, and proceeded thence by ordinary trains, reaching Newcastle at 8.36 a.m. and Hull at 3.9 p.m. Men changing at Crewe were due at Holyhead at 1.29 p.m., Bristol 2.28 p.m., Plymouth 6.55 p.m., and Devonport 7.10 p.m.

In addition to drafts and men on leave, the up-train sometimes had among its passengers many torpedoed or shipwrecked seamen who had been landed at Scottish ports with nothing but the clothes they stood up in. After, also, America joined in the war, officers and men of the U.S.A. Navy shared equally with those of the British Navy in the travel facilities afforded by the special.

The following were also allowed to travel by the train :—

Officers and men employed on colliers and oilers.

Officers and men employed in the boom defences.

Officers and men employed in uncommissioned drifters.

Officers and men employed in store carriers, ammunition ships, and carriers, puffers, frozen-meat vessels, tugs and water carriers.

Admiralty and Dockyard officials and men.

Employees of private firms proceeding to and from the Fleet, or engaged on Admiralty contract work afloat or ashore.

Sisters of the Royal Naval Nursing Service.

Aliens under escort.

Soldiers on leave from France to the Shetlands in possession of a combined leave and railway ticket, up to ten in number on any one day, travelling between Euston and Thurso, and *vice versa*.

Members of the Women's Royal Naval Service, proceeding to Orkneys or Shetlands, who had received permission to travel by the train.

Officers and men of the Royal Air Force travelling under the conditions in operation from time to time.

Doubtful cases were to be referred for decision to the Admiralty or to the local Senior Naval Officer. Soldiers on leave (with the exceptions stated above), Y.M.C.A. or Church Army hut-helpers, local ministers of religion, wives of officers and men, and local civilians of whatever standing were debarred from making use of the Naval Train. All persons not in naval uniform (unless prisoners or under escort) were required to produce a permit before they could make use of the train. Such permit, issued by one or other of ten specified authorities, did not, however, entitle the person in question to do more than travel by the train. A railway ticket and other prescribed papers had to be obtained in addition.

The numbers carried varied greatly from day to day. The average per train was about 300 ; but the train has been known to start from Euston with only from forty to fifty passengers, or to leave Thurso with thirty or forty (picking up, however, elsewhere), whilst on other occasions duplicate trains have been necessary for the conveyance of, for example, 800 men in the same direction on the same day. The sum total of those carried between the date the train was started

February 15th, 1917, and April 30th, 1919, when it ceased to run, was, approximately, 475,000.

During the whole of this period the Admiralty kept at their Naval Transport Office, Inverness, an exact record showing in regard to each and every one of the trunk-line specials the number of passengers picked up at each stopping place ; the totals day by day and month by month, and the number of minutes by which the trains were early or late either in starting or in arriving at destination. These returns (themselves, probably, to the extent adopted, without precedent in the operation of railways) were systematically laid before the railway companies, with the view, no doubt, of stimulating them to the maintenance of the utmost possible punctuality.

There were occasions, however, in the winter season, when the question was no longer one of arriving punctually at Thurso but of getting there at all. The elevations attained by the Highland Railway between Perth and Thurso are in themselves greater than those of any other railway in the British Isles. The highest of the various "summits" crossed reaches a height, between Perth and Inverness, of 1,484 feet. It is, however, from the snowstorms and the gales to which the line is subject that the greatest trouble is experienced.

The Naval Train which left Euston on Saturday, January 12th, 1918, ran, the following day, into one of the worst snowstorms, accompanied by a succession of gales and blizzards, which had visited Caithness for a period of twenty years. A snow-plough, sent on ahead on the Sunday to clear the line, itself got stuck at Scotscalder, some ten miles south of Thurso, and in the afternoon of the same day the Naval Train shared a like fate close behind, becoming so firmly embedded in the snow that there was no early prospect of getting it free again. Attempts were made to send food to the 300 naval passengers by means of hampers of bread carried on engine tenders ; but the engines failed to get through, and the men solved the food-supply difficulty next morning by leaving the train and walking across country for the remainder of the distance (about eight miles) to Thurso. Later in the day a relief train from Inverness, drawn by three engines, and bringing a relief party of 100 men, including fifty naval ratings and a number of men taken from urgent Government work at Kyle of Lochalsh, arrived at Scotscalder to dig the Naval Train out ; but, what with the terrible weather experienced and the difficulties and complications involved in the work—several of the plough-engines put on to disperse the snow themselves getting buried therein—it was a week before the line had been sufficiently cleared for the full train service to be resumed—and, incidentally, before the members of the Highland Railway Company's staff who were in charge of the operations got to bed. Meanwhile, the down-Naval Special could proceed no further to Thurso than Invergordon, whence the passengers had to continue their journey by sea to destinations in the Farther North.

The claim is nevertheless made for the Naval Train that, apart

from delays due to climatic conditions, to accidents on the line, or to other unavoidable causes, it was very rarely late, and this, too, notwithstanding the exceptional length of the journey made. Taking, for example, the arrivals at Euston during the month of March, 1919, the returns show that on five days the up-train completed its journey on schedule time; on eight it was one minute in advance thereof, and on two it was six minutes early. The days of late arrivals were—two, 4 minutes; three, 9 minutes; one, 14 minutes; one, 24 minutes; three, 34 minutes; and one, 49 minutes. Such figures as these are in the highest degree creditable to the companies directly concerned—namely, the London and North Western, the North British and the Highland.

With its through journey of over 700 miles the Naval Special was the longest-distance regularly-booked train that had ever run in this country. Save for the one change of carriage, at Crewe, it allowed of a continuous journey—in 28 hours 10 minutes—from Plymouth to Thurso, a distance of 834 miles. In respect alike to these distances; to the linking up in one train, in either direction, of naval-passenger services in connection with all home bases and all parts of the British Isles; to the continuous running of such a train day by day (Sunday excepted) on Government service for so long a period; to the incalculable benefits conferred on our national interests by so well-organised a system of naval-travel in war-time, and to the advantages derived by naval ratings from the conditions of watchful care and guidance under which they made their personally-conducted tours between South and North, or North and South, the Euston-Thurso Naval Special left a record unique in the history alike of warfare and of the world's railways.

CHAPTER XXXVI.

CLAPHAM JUNCTION OF THE NORTHERN SEAS.

WHILE the story told in the last Chapter may have been regarded as an interesting one, it is, after all, only half a story. It takes naval men from all parts of Great Britain to Thurso and leaves them there. But Thurso counted only as the end of a stage—the land section of a through journey to be continued on the ocean; and the finish of the story must needs be given before the reader can realise the full value and extent of the advantages which the running of the Euston-Thurso Special, under the conditions detailed, conferred alike on the Navy and on the national cause.

When, just before the declaration of war, the Grand Fleet arrived at Scapa Flow, it landed a staff of clerks from the Glasgow Post Office who were to undertake, partly on Scapa Pier and partly at Kirkwall, capital of the Orkneys, the postal duties for the Grand Fleet north of Thurso. The inward mails for the Fleet were to be brought to Kirkwall, sent on by road, a distance of three miles, to Scapa Pier, and be distributed thence among the various battle squadrons. Outgoing mails were to be received at Scapa Pier, taken to Kirkwall and then forwarded by boat to Scrabster for Thurso. The "base organisation" at Scapa Pier consisted, at the outset, of no more than the sea-going Fleet repair-ships, *Cyclops* and *Assistance*, of which the former was, shortly afterwards, connected to a shore telegraph cable off the village of Scapa, becoming a Fleet Post Office as well as a depôt for the few drifters which had then been requisitioned as auxiliary vessels.

Towards the end of 1914, however, it was found desirable, mainly on account of weather considerations, to remove the base of the Fleet from the north of Scapa Flow to a more sheltered position in the south-west of that expanse of almost land-locked waters, and the site chosen was a bay, known as Long Hope, which already had a naval history of its own. Four miles in length, Long Hope is on the south-east of the island of Hoy, which it separates from South Walls, whilst direct entrance to it for vessels coming from Pentland Firth is prevented by a causeway of sandbanks, forming a further bay, Aith Hope, on the south. In the early part of the nineteenth century, Long Hope became a rendezvous of the Royal Navy sailing-ships of that period, the narrow entrances to the bay, on the north, being defended by martello towers, supplemented by the provision of a battery at the southern end for the better

— ORKNEY ISLANDS. —
(Southern Section).
Shewing the situation of Scapa Flow in respect to the Terminus of the Highland Railway.

protection of the causeway just mentioned. With the introduction of steamships in place of sailing vessels, the importance of Long Hope for naval purposes declined and the defences were dismantled; but it was, nevertheless, to this sheltered and more convenient position that the base organisations of the Grand Fleet for the purposes of the Great War were now to be transferred.

One of the first steps taken in this direction, in November, 1914, was the towing of the old cruiser *Impérieuse* (formerly *Fisgard I* and, at the outbreak of the war, serving as a boy artificers' training ship, at Portsmouth) from the South to a point in Long Hope Sound about two miles off Long Hope Pier, where, under the command of Captain Bertram Chambers, the King's Harbour Master, she became the general depôt ship of the Grand Fleet, and acted both as Grand Fleet Post Office and as overflow ship to the *Cyclops*. The Fleet itself lay in lines off the north side of Flotta, and the larger of the auxiliary vessels—colliers, store ships and ammunition ships—lay in Gutter Sound, between Long Hope and Hoy Sound.

Post Office work on the *Impérieuse* was at first limited to receipt and distribution of incoming mails for the Fleet, forwarding outgoing mails in bulk to Inverness, where they would be sorted and otherwise dealt with, and sale of postage stamps.

In June, 1915, these arrangements underwent a reorganisation. The civil postal staff on board was supplemented by a naval postal staff, operating under the direction of Lieutenant-Commander Richard Say, O.B.E., R.N.V.R., as Fleet Mail Officer; mails collected from the Fleet were to be sorted on the *Impérieuse*—now officially designated "Fleet Post Office A"[1]—letter-bags for direct dispatch to leading towns in England and Scotland were to be made up on the *Impérieuse*, and money order and savings bank business was to be done. Other postal facilities were afterwards added, and it was claimed that those eventually made available on the waters of Scapa Flow could scarcely be equalled in a town of 100,000 inhabitants.

The *Impérieuse* became, too, a collector and distributor not only of naval mails but of naval personnel. When the naval men reached the terminus of the Highland Railway at Thurso, they went by conveyances to Scrabster Pier, whence they were taken on (by the *Hebridian* down to July, 1915, and, after that date, by the *St. Ninian*, requisitioned by the Admiralty from the North of Scotland and Orkney and Shetland Steam Navigation Company), across Pentland Firth to Long Hope, and so to the *Impérieuse*.[2] Arriving alongside in about two hours, they would go on board the depôt ship by a gangway on one side, report themselves, pass through various formalities, and descend by the gangway on the opposite side to join one or other of the smaller vessels in attendance there for the purpose of conveying them to an ultimate destination either in Scapa Flow itself or elsewhere.

[1] "Fleet Post Office B" was set up, on shore, at Rosyth.

[2] When the weather conditions at Scrabster were unfavourable, the harbour at Wick became the point of departure instead.

For this reason it is that H.M.S. *Impérieuse* deserves to be known in the naval history of the war as, not alone the Floating Post Office of the Grand Fleet, but the Clapham Junction of the Northern Seas.

The distribution both of mails and of men among Fleet vessels great and small in and around Scapa Flow was considerable in itself; but the work done went much farther than that. Three times a week, for example, there awaited the arrival of the *Hebridian* or the *St. Ninian* in Long Hope another mail boat which was to leave an hour or so later to convey naval passengers and mails to Lerwick.

Capital of the Shetlands and situate 116 miles N.E. of Kirkwall and 300 miles N. by E. of Edinburgh, Lerwick was the centre of naval activities which played a part of great importance in the eventual winning of the war. It was, in fact, at Lerwick that the 10th Cruiser Squadron, while having Liverpool for a base so far as regarded all the heavy work of upkeep, had its headquarters in the North, and what the 10th Cruiser Squadron had to do was to carry out the blockade of the northern entrance to the North Sea—in other words, to intercept and board all vessels bound into or out of that entrance, and, in the case of those in regard to which the first examination at sea aroused any suspicion, to send them on, with armed guards, to Kirkwall or Lerwick Harbour for a more detailed examination, the final decision as to what was to be done with those vessels being arrived at in London on the reports made in each instance. The special function of the 10th Cruiser Squadron was, in fact, that of keeping watch on the North-About Passage, with the dual object of preventing German cruisers or armed liners from breaking out into the Atlantic and of stopping homeward-bound merchantmen, whether belligerent, neutral or allied, as a check upon the conveyance of contraband to German ports.

From the spring of 1915 the blockade line extended from Orkney and Shetland past the Faroe Islands to Iceland, and, when the sea was sufficiently free from ice, round the north of Iceland, also. In the early days of the war the 10th Cruiser Squadron consisted of vessels of the "Edgar" class, at least twenty years old; but these were soon withdrawn, and eventually the Squadron, raised to a strength of twenty-four ships, was formed mainly of armed merchant cruisers—"Atlantic Greyhounds," capable of great speed, and well qualified to give good chase to enemy vessels which, under various disguises, were adopting a merciless attitude alike to British, allied and neutral shipping. A large proportion of the officers and men of the Squadron, as reconstituted, also belonged to the mercantile marine. The efficiency of the blockade increased gradually from its inception until, as Admiral Lord Jellicoe says in his book on "The Grand Fleet," the percentage of ships which evaded the Squadron became almost negligible. "The decisive effect of the blockade," he further says, "did not become apparent until the end, when the final crash came and it was seen how supreme an influence on the end of the war this powerful weapon had been."

Co-operating with the 10th Cruiser Squadron, and supplementing

the blockade work which, as we have seen, extended on the north-west to Iceland and beyond, there was the Northern Patrol, which carried on operations as far to the east as the coast of Norway, and there were local patrols specially concerned with the defence of the Orkneys and Shetlands. Then there were, also, huge air stations; there were well-manned forts to safeguard the booms between the different islands, and there was a constant coming and going of men on the great number of auxiliary vessels which sufficed in themselves to make certain parts of Scapa Flow almost a congested area of shipping. Finally, too, came the addition of an American contingent to the Grand Fleet.

So, within the range of the Orkneys and Shetlands, a relatively immense population—many, if not most, of whom would require to make at least occasional journeys to or from the South by rail—was eventually to be found, while practically all would be dependent on Fleet Post Office A for their mails. Apart, therefore, from questions of naval strategy, one realises still more clearly from the facts here given what an important part the line of communication represented by the Highland and the other railways connecting with it played in the war-time experiences of all who were directly concerned in the movements or the maintenance of the Grand Fleet.

With the institution of the Euston-Thurso Naval Special, there came a great acceleration in the flow both of personnel and of mails, on a through line of communication and via the distributing centre on the waters of Scapa Flow, from places as far south as Portsmouth and Plymouth to others as far north as the Arctic Circle. How the situation was affected by the running of this train can best be shown, perhaps, by the following time-table :—

Leave Euston	6 p.m.
Arrive Thurso (next day)	3.30 p.m.
Leave Scrabster (boat)	5.30 p.m.
Arrive Scapa Flow	7.30 p.m.
Leave Scapa Flow	8.30 p.m.
Arrive Lerwick (about)	7.30 a.m.

Thus the total time taken on the journey from Euston to Lerwick was, under ordinary conditions, no more than thirty-seven and a half hours.

In proportion, also, as the number of ships and shore establishments connected with the Grand Fleet steadily increased, Fleet Post Office A became the headquarters of a great postal organisation which, operated from the *Impérieuse* with the help of up to forty or more colliers, store ships, carriers, etc., embraced all naval stations, ships, squadrons and forces north of Thurso. The work included, in the one direction, the regular collection and dispatch of mails from or to the Orkneys, Shetlands, Iceland and, with a rounding of the North Cape, the White Sea, while in the other direction the letter mails made up for the leading cities and towns of England and Scotland were supplemented by combined letter

and parcel mails for a smaller number of destinations and parcel mails for Inverness, Perth, Crewe, London and Bristol.

Such, in fact, was the extent of the postal business eventually done on the *Impérieuse* that there were occasions when the number of letters and parcels, inwards and outwards, dealt with on a single day numbered, approximately, 50,000. Taking the period from June, 1915, to the cessation of hostilities on November 11th, 1918, the official records show the following figures, among others :—

Letters and parcels :	
Delivered	80,000,000
Sorted and dispatched	41,000,000
Registered articles forwarded	211,000
Postage stamps sold	£270,500
Money Order transactions	47,000
Postal Order transactions	96,000
Savings Bank transactions	14,000

There were still other advantages derived from the improvements effected in the lines of communication with the Grand Fleet.

Early in the war the Commander-in-Chief had the happy inspiration of keeping officers and men in the Grand Fleet well informed concerning the issues at stake and the developments brought about from day to day, and measures were taken to attain this purpose by the provision of an early, regular and abundant supply of newspapers.

When Fleet Post Office A was organised on H.M.S. *Impérieuse* in June, 1915, the Fleet Mail Officer arranged to obtain, on specially-favourable terms, supplies of English and Scottish newspapers which the marine postmen boarding that vessel with outgoing mails would take back with them and dispose of on the ships to which they conveyed the incoming mails ; though the rule was strictly enforced that they were to ask no more than the published price for the papers, their own remuneration coming to them in the form of a 10 per cent. commission on the sales. The net profits made were devoted to naval beneficent purposes. The sales for the month of July, 1915, amounted to £515.

On the creation, February 1st, 1916, of the Grand Fleet Fund, the business was taken over by a Fleet Newspaper Committee representing that body,[1] and by January, 1917, the monthly sales had increased to £1,588. It was, however, with the inauguration of the Euston-Thurso Special, in the following month, that the greatest expansion was brought about, attributable, in part, to the acceleration then obtained in the transport of the papers, and especially so in the summer months. The results were, indeed, remarkable in their way. Early copies of the Manchester edition of the *Daily Mail* for the next day's issue were sent

[1] The Grand Fleet Fund, brought into being at a meeting held on board H.M.S. *Iron Duke* and presided over by Admiral Lord Jellicoe, was formed to create a reserve fund, under the management of petty officers and men of the Royal Navy, for the purpose of giving help after the war to disabled men and dependents of those lost. With it there were afterwards affiliated various other naval funds in order to avoid overlapping and to secure a central organisation.

to Preston in time to be put on the Naval Train there on its arrival at 10.15 p.m. Edinburgh was reached at 3.15 a.m., and here there were received parcels of the same day's *Glasgow Herald*, sent on from that city by special train, and, also, copies of the Edinburgh *Scotsman*, rushed off to Waverley Station direct from the machines on which they had just been printed. Thanks to the arrangements thus made, in combination with the running of the Naval Train, the three newspapers mentioned were all obtainable on board H.M.S. ships at Scapa Flow by 7.30 p.m., or soon after, the same evening. At Lerwick they were available, three times a week, the following morning. Many other papers and publications, daily or weekly, were also distributed among the Fleet ; but it was the three in question which established the record, and secured the greatest favour, as being on sale at Scapa Flow when they were still " to-day's papers."

Then, with the steady increase in the personnel of the Grand Fleet, the sales of newspapers by the fifty or sixty marine postmen concerned therein expanded month by month until a maximum of £4,025 in the gross receipts for October, 1918, was attained. From that time there was a decline which became especially marked as the Grand Fleet dispersed ; but by the end of June, 1919, the aggregate sales had amounted to £84,000—a sum which not only yielded a substantial net profit for the Grand Fleet Fund but suggested that the total number and the aggregate weight of the papers carried by train and boat for distribution among the Naval Forces under the conditions described must have been great indeed.

Good use was also made of the Naval Special for the transport of cinema films which, with the necessary gear and installations, were supplied regularly and on a considerable scale to Grand Fleet vessels and shore establishments by a committee once more operating in the dual interests of the Grand Fleet Forces and the Grand Fleet Fund finances. So complete were the arrangements made, and so efficient was the transport service available, that the latest creations in the film world were often being shown between Thurso and the Arctic Circle almost as promptly as at the cinemas of London or of leading provincial towns. From October 1st, 1917, to April 30th, 1919, the amount expended by the Fleet Cinema Committee on purchase and hire of films and purchase of installations and gear sent out to ships of the Grand Fleet was over £14,000, while the receipts, in the way of subscriptions from the ships, etc., left a net balance in favour of the Fund of £2,000.

CHAPTER XXXVII.

THE RAIL-HEAD OF THE GRAND FLEET.

The first distributing centre for naval supplies in connection with the war was Dingwall, the county town of Ross-shire, and situate eighteen miles north of Inverness, at the head of Cromarty Firth. At that time the Fleet was scattered over a number of bases on the north and west coasts of Scotland, and Dingwall constituted a convenient junction on the Highland Railway from which stores could be sent on either by the main line to Thurso or by the Skye branch of the Highland Railway to Achnasheen or Kyle of Lochalsh for warships and naval depôts to be served therefrom. These facilities for ready distribution offered the additional advantage that the stores could be kept on land for as long a time as this might be practicable.

As soon, however, as the protection of Scapa had been completed, the Grand Fleet was concentrated at that base, and Dingwall no longer answered the same purpose as before. The whole of the rail traffic for the Fleet was now concentrated at Thurso, the nearest port on the mainland to the naval base; but the facilities available there left much to be desired. In the first place there was the fact that the 272 miles of main line between Perth and Thurso consist exclusively of single track save for a total length of forty-one miles of double track. Congestion of traffic under war conditions was thus inevitable. Then the harbour of Scrabster, from which the steamers sail for the Orkney and Shetland Islands, is about two and a half miles from the terminus of the Highland Railway at Thurso, and all the supplies to be embarked for the Fleet had to be carted by road for this intervening distance. Finally, the accommodation for the shipment of naval stores at Scrabster was meagre in the extreme. The harbour has been described as being "about the size of a pocket-handkerchief"; and the idea of supplying all the wants of a Grand Fleet in war-time from such a mere jumping-off point as this—however well it might still serve, as, in fact, it did, for the embarkation of naval personnel and mails—was speedily found impracticable.

It was under these conditions that the choice of a new distributing centre in place of Thurso fell upon Aberdeen; and every condition and circumstance was in favour of the choice thus made.

Aberdeen—which ranks as the capital of the North of Scotland; has a population of nearly 164,000, is one of the leading centres in the British Isles for trawl-fishing, includes shipbuilding among her various indus-

tries, and possesses an excellent harbour and docks, with a large fish-market and commodious quays, wharves and warehouses all well equipped with railway sidings—is reached from England by three routes of double-line railway. These are (1) the West-coast Route, viâ the London and North Western to Carlisle and thence by the Caledonian to Aberdeen, which forms the terminus of the Caledonian system on the north-east; (2) the East-coast Route, viâ the Great Northern and the North Eastern to Berwick and thence by the North British to Kinnaber Junction, from which point the North British Company have running powers over the Caledonian line to Aberdeen; and (3) the Midland Route as far as Carlisle, where either the Caledonian or the North British can be joined for the remainder of the journey. Then Aberdeen is the headquarters of the Great North of Scotland Railway, which serves the area extending from the Dee to the Moray Coast and links up with the Highland Railway system at Elgin and Keith. Aberdeen was thus accessible for naval traffic by rail from all parts of England, Wales and Scotland, and her local facilities were, in addition, fully equal to requirements.

In respect to railway facilities at Aberdeen, the original terminus there of the Great North of Scotland Railway was on Waterloo Quay. The terminus of the Caledonian system was at Guild Street, and between the two there was a stretch of about 700 yards of quay and busy thoroughfares, with the result that the interchange of traffic was attended by great inconvenience. In 1867 the Caledonian and the Great North of Scotland Companies opened at Guild Street a Joint Station to which the latter company gained access by a deviation of their main line from Kitty-brewster, one and three-quarter miles north of Guild Street. Thence-forward the Waterloo terminus was used by the Great North of Scotland solely for goods passing on their line to or from the north. The new Joint Station, which was over 500 ft. long by 100 ft. wide, and to which the North British Company also had access, was, at first, regarded as one of the finest railway stations in Scotland; but it became unequal to Aberdeen's great industrial and commercial developments, and in 1912 there was begun by the Caledonian and the Great North of Scotland the construction of a still finer and more commodious station, finally completed in 1915. This new station, with its approaches, etc., covers a total area of eleven and a half acres. Five acres are occupied by buildings or spaces roofed over. In the passenger station there are thirteen platforms. These have an aggregate length of 11,340 ft. The longest of them all is 1,596 ft. On the east of the passenger station there is a goods station with commodious sidings and a network of lines along which wagons can be hauled to or from every part of the docks; though such haulage within the dock area is the prerogative of the Great North of Scotland Company. At Craiginches, south of the Dee, and about one mile from the Joint Station, the Caledonian Company have sidings capable of accommodating six hundred wagons, and these and other sidings in or around Aberdeen were of great service in dealing with the masses of war traffic which required to be handled.

The portion of Aberdeen Harbour more especially utilised by the Admiralty as the Grand Fleet rail-head was the north-west corner of Victoria Dock. This dock, including the Upper Dock, covers an area of twenty-nine acres, and is entered from the Tidal Harbour either through dock gates at high tide or by means of a lock at low tide. It is bordered on the north by Waterloo Quay (which connects with the Waterloo Goods Yard of the Great North of Scotland Railway Company) and, also, by the Regent Quay, leading direct to Guild Street. In the aforesaid north-west corner of the dock there is a large two-storied building used as a transit shed and having a floor-space of 5,066 square yards. Provided with three electric cranes, each capable of lifting 30 cwts. and running the entire length of the roof, this shed was admirably adapted for dealing with cargo discharged from or loaded into the boats alongside. At the time of the outbreak of war the western end of the shed had been let to a shipping firm trading between Aberdeen and Hamburg and Rotterdam. Their notice-board remained in position over the entrance during the whole time that the shed was occupied for naval purposes.

With a view still further to encourage the flow of traffic to the port, the Harbour Commissioners had conceded to traders the free use of this transit shed for a period of forty-eight hours after discharge of cargo, payment for accommodation therein not being asked for until such period had elapsed. Owing to the practical cessation of commercial shipping between Great Britain and the Continent; to the fact of the commodious shed in question being available, and to the excellence of the railway and shipping facilities, the choice of the Admiralty fell upon Aberdeen as the port from which, thenceforward, the Grand Fleet was to be supplied; and, as it happened, the transit shed in Victoria Dock was the first structure taken over by the naval authorities when they began their operations.

There were other directions, also, in which most useful accommodation was secured at Aberdeen for Admiralty purposes. Under war-time conditions the great fishing industry of the port underwent a very substantial diminution. The Admiralty wanted practically every efficient steam-fishing vessel (together with its crew) for war-service as a mine-sweeper or a patrol vessel; the available fishing areas for boats the Admiralty could not use were restricted, and the usual oversea markets for Aberdeen exporters were no longer available. So the covered-in Fish Market which, after repeated expansions, occupies a space of 12,231 sq. yards alongside the Albert basin and, in normal times, becomes a congested area of fish by eight o'clock in the morning, had the unaccustomed experience of being more than equal to requirements. Hence the naval authorities were able to make use of a substantial section of the market for the housing, or sheltering, of gear and fittings which, removed from trawlers, drifters, yachts, etc., altered to suit Admiralty requirements, had to be stored until the time came for the reconditioning of the vessels at the end of the war. Another portion of the Fish Market was converted into a workshop for the fitting and repair of electrical

apparatus employed as a means of detecting the approach of enemy submarines.

The Admiralty also utilised Pocra Quay, situate on the north-eastern side of the Tidal Harbour, as a coaling depôt; they set up an oil-fuel installation at Point Law, at the extreme point of the Esplanade and the Albert Quay, on the northern shore of the river Dee, and they acquired other accommodation as was found necessary. The total extent of quay and street space utilised for the storing of heavy and bulky articles was about 5,000 square yards.

There was, however, no taking over of the Port of Aberdeen as a whole for the purposes of the war. This measure was avoided in order that the local trading conditions, which it was desirable to maintain in the interests both of Aberdeen and of the country in general, should not be interfered with more than was absolutely necessary, while the Admiralty representatives found that local authorities, railway companies and the trading community were always ready and eager to assist them to the full extent of their power.

Such, then, was the Port of Aberdeen which, offering the facilities mentioned, became from January 15th, 1915, the rail-head and distributing centre for almost everything (except fuel, large consignments of ammunition and consignments of general stores so small that they could be forwarded by parcel post) which was wanted for the men-of-war, mine-sweepers, hospital ships (or, subsequently, ambulance transports), oilers, colliers, canteen ships, etc., constituting the Grand Fleet. Included therein were food supplies, everything necessary either to maintain life and well-being at sea or to provide for the needs of vessels which, as ships of war, had to be kept ever ready for whatever might happen, and, in addition, all that was wanted for construction, repairs, maintenance or other purposes at the advance bases of the Grand Fleet.

These various requirements fell into four main groups: (1) Victualling stores; (2) naval stores; (3) ordnance stores and (4) medical stores.

In the first instance the supply to the Grand Fleet of "victualling stores" (in which term was included not only provisions, but cooking utensils, clothing, tobacco, soap, libraries, etc.) was provided for by the setting aside of certain ships for their conveyance by sea from the victualling yards in the south to Aberdeen. Having regard, however, to the increasing demand for shipping, developed as the war progressed, it was thought, in the summer of 1916, that the vessels in question should be set free for use in other directions by the making of arrangements for sending victualling stores to Aberdeen by train, instead. So it was that from June, 1916, special trains conveying monthly supplies of these stores, loaded into sealed box-wagons, were run to Aberdeen on fixed dates from the Royal Victoria Yard, Deptford, the Royal Clarence Yard, Gosport, and the Royal William Yard, Plymouth. The extent of the stores so forwarded may be judged from the following estimate of requirements for the month of October, 1918, as furnished to the railway companies by whom the requisite transport facilities had to be provided:—

For	From	Weight
Detached Ships	Gosport	130 tons
1st Battle Squadron and *Diligence*	Gosport	216 ,,
2nd Battle Squadron	Deptford	154 ,,
4th Battle Squadron	Gosport	102 ,,
Queen Elizabeth, *Oak*, and 5th Battle Squadron	Deptford	156 ,,
2nd Cruiser Squadron	Gosport	120 ,,
	Total	878 tons

In addition to the victualling stores thus received regularly from the south, there were dispatched to the Fleet every week about 6,000 bags of potatoes forwarded to Aberdeen from all parts of Scotland. There were also shipped to the Grand Fleet every week from 2,000 to 3,000 packages of fresh fruit and vegetables sent from all parts of the country as gifts for the personnel, and carried alike by rail and by sea at Government expense. So considerable were the quantities coming to hand that a special organisation had to be arranged at Aberdeen for sorting and distributing them.

Victualling stores and food supplies of all kinds were, however, only a small item as compared with the sum total of the naval traffic forwarded to and dealt with at the port.

If thousands of tons of foodstuffs, clothing and general necessaries had to be shipped from Aberdeen for the personnel of the Fleet, it was no less essential that tens of thousands of naval stores should be forwarded to feed the ships themselves, to keep them in first-class seagoing efficiency and to provide for all their wants alike at sea and at their nearest naval bases. Little is known outside naval circles as to the prodigious appetite of a man-of-war, and the average British citizen has probably no conception of the fact that the official list of stores necessary completely to satisfy that appetite comprises from 25,000 to 30,000 items. Included therein—taking a few haphazard—one finds timber and timber articles; metals (copper, tin, lead, zinc, etc.); metal articles (steel plates, angles, anchors, cables, buoys, steel-wire ropes, chain, brass and copper tubes); machinery, pumps, electrical gear, canvas, cordage, furniture, tools, ironmongery, carts, wagons, fire-hearths, fire-bricks (as many as 5,000 or 6,000 of these will be wanted at one time, when a warship is in dry dock, to replace defective ones around the boilers), and ships' boats ranging in length from 10 ft. to 60 ft.

Not only was Scapa provisioned from Aberdeen, but most of the other wants of that headquarters of the Grand Fleet were supplied from there. The whole of the materials—including at least 50,000 tons of cement—required for workshops, huts, etc., forming the naval and military shore-establishments at Scapa went from Aberdeen. So did all the materials, together with contractors' plant, requisite for the building of a wharf 500 ft. long, with a depth of water alongside of 34 ft. This wharf was originally designed to serve the purposes of a dockyard; but it was found more convenient to send on to Invergordon any vessels requiring dock-

yard treatment and to convert the Scapa wharf into an oil-fuel base instead.

Aircraft, arriving at Aberdeen by rail in cases 40 ft. long, each containing a complete machine, was shipped thence either for the aircraft vessels which accompanied the Grand Fleet or for the aircraft stations set up in the Orkneys and the Shetlands. The unloading of these huge cases from the low trucks on which they were conveyed by rail from the south was always a source of attraction to the Aberdeen public.

Materials and machinery necessary for the building and equipment of these aircraft stations, together with maintenance stores (including re-place seaplanes), were shipped from Aberdeen. So, too, were all things essential to the land defence of the islands.

Altogether the number of seaplanes forwarded was about fifty. Other items, apart from the cement already mentioned, included over 100 motor-lorries and cars ; ten locomotives ; twelve travelling cranes ; all classes of guns and mountings up to 6 in. ; all classes of boats (steam, motor, sailing and pulling) up to a length of 60 ft. ; about 600,000 gallons of lubricating oil ; 150,000 gallons of petrol and 500,000 sacks of potatoes.

In the handling of this traffic, all loaded wagons were held up in the first instance at the Caledonian Company's Craiginches sidings. There they were marshalled, and they were ordered forward by the Admiralty officials in the exact order and number according to which their contents were wanted for shipment. There was thus no risk of congestion in the Joint Station Goods Yard, which the trucks merely crossed on their way, viâ the harbour rails, to Regent Quay.

Practically the whole of this wide range of supplies were forwarded to the Grand Fleet or to Grand Fleet bases by means of naval store-ships, Aberdeen Harbour being unequal to the accommodation of naval vessels of a larger type than destroyers. Of these store-ships there were eight in constant use. All were ordinary coasting steamers, though all of them are declared to have done their work "splendidly." The Fleet bases served were three in number—Scapa, Invergordon and Rosyth ; and Aberdeen was found a conveniently-situated distributing centre for the three.

Scapa was the base to which all but a comparatively small proportion of the stores, etc., were sent for the vessels forming the Grand Fleet and mostly calling there from time to time, wherever their own particular sphere of operation might be. Stores in bulk (apart from minor consignments) for ships in the squadron making use of Cromarty Firth mainly went there by sea from Aberdeen, instead of being sent by rail to Invergordon. Had the latter course been adopted they would still have had to be transferred from land to water, while the railway lines leading to Invergordon—which had become the repairing-base for the Fleet—were already in a state of chronic congestion in dealing with the enormous mass of material wanted, first for the construction of the dockyard, and then for the repair and refitting of the vessels sent there. Invergordon, in fact, never became more than a sub-distributing centre so far as supplies

for the Grand Fleet were concerned. Nor had Rosyth—where there was still so much to do when war broke out—the necessary facilities, down to quite a late period of the war, to enable her to be independent of Aberdeen.

On leaving Victoria Dock, each store-ship was loaded with from 600 to 900 tons, according to the capacity of the vessel, and supplies for services afloat would be discharged alongside the ships for which they were intended. Neither at Scapa nor at the two other bases was there any accommodation for warship stores on shore.

Having discharged its cargo, each store-ship generally returned to Aberdeen loaded up afresh with material sent back either from the warships or from the land establishments. These return cargoes included large quantities of unserviceable ordnance; machinery or appliances in need of repair; contractors' material; empty casks, cases, bags and packages, and a great variety of other things, the transport of which to further destinations meant a good deal of extra strain and labour for the railways. Much of the traffic thus arising consisted of material to be forwarded to factories in various parts of Great Britain or to dockyards in the south of England for repair, and the complexities of the situation were, in consequence, materially increased from a railway point of view.[1]

The Admiralty officials at Aberdeen could not always depend on being able to make use, for their return consignments, of wagons which had brought naval supplies to Aberdeen. They were bound, as far as they possibly could, to work in combination with the local trading community since there were occasions when it was essential that the inwards wagons should, on being unloaded, at once be sent back to the south with potatoes, manures required in the interests of food production, or other urgently-needed commodities. When, therefore, the store-ships returned to Aberdeen and there were not enough Admiralty wagons on hand to clear them of their loads, a considerable tax might be put on the wagon resources of the Scottish railway companies owing to the need that they, as far as they could, should make good the deficiency.

All such transport difficulties as these were, however, invariably found capable of adjustment. They were mainly surmounted by means of conferences between all the interests involved, and, in spite of the almost complete occupation of the port by the Admiralty, there was never the slightest friction between that department, the railways, the port authorities, the traders and the community, or, so far as is known, any real interference with the interests of those concerned.

The incoming cargoes were usually loaded direct on to railway trucks

[1] The returning store-ships also brought back to Aberdeen large quantities of waste which, as the result of "Grand Fleet economies at Northern Bases," were disposed of in the interests of the Grand Fleet Fund. Thus between March 1st, 1917, and March 31st, 1919, the amount realised from the sale of bones, dripping and fat landed at Aberdeen (the dripping and fat being sent on to inland destinations for the manufacture of explosives), was £2,891; from bottles and jars, £377; tins and scrap, £245; boxes, etc., £35; and rags, old clothing and wool serge, forwarded to mills in Yorkshire, £2,395. The total amount thus raised at Aberdeen for the benefit of the Fund was close on £6,000. A similar collection at Rosyth brought in £7,800.

on the south side of Victoria Docks, any detention of the outgoing traffic being thus avoided.

Among the later developments at Aberdeen was the establishment there, on behalf of the United States Government, of a supply and transport base for the maintenance of the five battle-ships sent over by them for service with the Grand Fleet. This work was undertaken by the staff of the British Admiralty on lines similar to those already in operation in regard to our own ships and naval bases. Supplies for the American vessels came in bulk from the United States to ports on the west coast of Scotland, were conveyed by rail to Aberdeen, and were there sorted out and sent on to the American vessels by the British naval store-ships. This involved the rail transport, the handling at Aberdeen and the shipment thence of about 2,000 tons of cargo per month. The American Admiral expressed his great satisfaction with the way in which the transportation and distribution were effected.

One feature of the additional cargo thus passing through Aberdeen was the remarkable variety of commodities which the American sailor is, apparently, accustomed to use when he goes to sea—and even when he goes to war ; though what attracted more notice, perhaps, than any other item were the relatively enormous quantities of " candies "—many of them called by the oddest of names—that were consigned to our trans-Atlantic cousins. The lady clerks on the local Admiralty staff were especially amused to find that the American fighting-man could not carry on without heaps of " Chocolate Kisses."

Another development which brought additional traffic to the railways was the decision of the Admiralty to make Aberdeen a central depôt for all Scottish and Irish bases from which trawlers were worked for the purposes of the war. This course was adopted because it was found that stores and gear of a type peculiar to fishing vessels were to be obtained more readily at or from Aberdeen than elsewhere. The arrangement was one that led to an appreciable amount of extra railway traffic, first in the forwarding of supplies to Aberdeen, and then in the distribution of them from that centre to places along the west coast of Scotland or on the east coast of Ireland.

Begun in January, 1915, the Admiralty traffic at Aberdeen was continued until March, 1920. Taking six-month periods for the years 1915 to 1918 inclusive, the average volume of traffic dealt with during each of those periods was, approximately, 35,000 tons. The heaviest period of all was the first six months of 1918, when the figure attained was about 50,000 tons. This expansion was attributable to the urgency being shown in the completion, at as early a date as possible, of the air stations in the Orkneys and Shetlands. The materials for the construction of the stations were forwarded to Aberdeen and shipped in sections, and, when the buildings themselves were ready, many ship-loads either of equipment or of things necessary for running the stations had also to be sent from Aberdeen. In the last six months of 1918 the volume of traffic handled was estimated at 40,000 tons.

ABERDEEN HARBOU

RAILWAY CONNECTIONS.

The actual number of loaded wagons hauled by the Great North of Scotland Railway Company between their own, the Caledonian and the North British goods yards and Aberdeen Harbour on Admiralty account between January 15th, 1915, and February 28th, 1919, was 67,823, and the estimated weight of their contents was 297,900 tons. These figures do not include the coal supplied to trawlers, mine-sweepers, etc., at Pocra Quay, such coal being received there by sea from the Firth of Forth.

The Admiralty undertook all the unloading and loading of their traffic in Aberdeen Harbour. The staff responsible for the work on Admiralty account, and operating under the direction of the Naval Store Officer of the Grand Fleet, comprised a permanent indoor staff of three Admiralty officers; two temporary ex-Army men; twenty-two lady clerks (including several University graduates) resident in Aberdeen; an outdoor permanent staff of five, and an average of about 200 local labourers, belonging to a wide range of ordinary occupations. Of the outdoor staff only six were medically fit for service in H.M. Fighting Forces.

Admiralty representatives speak in terms of the highest praise of the cordial and ever-willing assistance rendered to them by the railway and harbour officials at Aberdeen. They say, also, that the handling of so great a volume of war-traffic there was immensely simplified by the excellence and efficiency of the railway and other transport facilities. In confirmation thereof, the fact may be stated that the number of wagons on hand at the Craiginches sidings—including empties retained, when conditions allowed, for back-loading—rarely exceeded one hundred, and that the only serious block which occurred at the sidings during the entire period they were in use by the Admiralty was on the occasion of a severe storm at Scapa when two naval store-ships ran ashore and were out of service for a considerable time. At the worst stage of this experience there was on hand an accumulation of about five hundred loaded wagons, representing ten days' traffic; but relief ships were provided by the Admiralty, assistance was rendered by the railway companies, and the accumulation was cleared in the course of a fortnight.

CHAPTER XXXVIII.

INVERGORDON, DALMORE AND U.S. MINES.

IMMEDIATELY on the advent of war the North of Scotland—situate opposite not only the German and Belgian coasts but the German naval base at Heligoland—became a place of extreme strategical importance.

The Fleet was already at Scapa Flow ; but there had been a deficiency of preparation in other directions, and measures were taken to adapt and to safeguard, with the utmost urgency, the northern coasts of Scotland as a permanent war-base for the Fleet. Shipping was sunk in the minor entrances to Scapa Flow to render them inaccessible. Loch Ewe, on the western coast of Ross-shire, was converted into a well-protected coaling and supply depôt for the Fleet. It was, however, at Invergordon, on Cromarty Firth, that the greatest changes—amounting, in fact, to a marvellous transformation—were to be effected.

Before the war, Invergordon was a town little larger than a village, situate thirty-one miles beyond Inverness, on the main line of the Highland Railway between Perth and Thurso, and consisting mainly of one long street. It began to assume more importance when the Admiralty adopted Cromarty Firth as a Fleet-practice base, and when, also, Invergordon itself became an oil-fuel depôt for H.M. Navy. Oil-tanks of large capacity were constructed, and vessels bringing oil from overseas came alongside two unpretending piers from which oil-pipes, connecting with pumping machinery, conveyed oil to the tanks. Just before the war broke out, two prominent points, one on each side of the narrow entrance to Cromarty Firth and known as the Sutors of Cromarty, had been fortified, and arrangements were now made to construct across the said entrance to the Firth (this being done by October 21st, 1914) several lines of floating booms carrying a curtain of netting—a scheme of submarine obstruction which, devised by the King's Harbour-master at Cromarty, Commander Donald J. Munro, R.N., was afterwards generally adopted at British naval bases. A beginning was also made with what was to become a substantial increase in the number of oil-tanks. Three large military camps were set up—one at Invergordon, for 2,000 men ; another at Nigg, on the north side of Cromarty Firth, for from 3,000 to 4,000 men, and a third at Cromarty, on the south side of the Firth, for 1,500 or 2,000 men.

All these things, however, were less remarkable in their way than those which attended the conversion of Invergordon and Cromarty Firth into a base for the repair of ships of war.

Invergordon Dockyard.

With the development of naval policy that occurred on the declaration of war, the situation brought about—as told by Admiral Viscount Jellicoe in his book on "The Grand Fleet"—was that "whilst we shifted our Fleet to the North, all the conveniences for the maintenance of that Fleet were still in the Channel ports." One absolute essential of the situation was, therefore, that there should be at once created in the North a dockyard which would provide for all the needs of the Fleet in regard to

the said maintenance; and, in the opinion of the experts concerned, the northern shore of Cromarty Firth was specially adapted to the desired purpose.

The transfer to Cromarty, in the event of war, of a floating dock from one of the southern dockyards had, as Viscount Jellicoe further relates, already been decided on by the Admiralty. Action in this direction was now taken, a floating dock capable of accommodating the largest of British warships arriving at Invergordon, from Portsmouth, on September 6th, 1914.[1] A staff of dockyard workmen was sent to Invergordon

[1] "It can be said with great emphasis," remarks Viscount Jellicoe, "that this floating dock was simply invaluable to the Grand Fleet."

and a series of important developments followed in rapid succession.

The Admiralty acquired and reconstructed the two existing piers, and they built a new one, over 700 ft. in length, with a tee head of 400 ft. × 50 ft., and carrying railway lines, oil-pipes and water-mains. They also took over the chemical-manure works of the Highland Agricultural Company. These they converted into an engineering shop, laying down concrete floors, fixing overhead travellers, and installing all the needful machinery. Then, step by step, they absorbed surrounding streets, lands and buildings—and they reclaimed, as well, several acres of land from the sea—for extensions both of the harbour and of the engine-shops, modern, fully-equipped buildings being eventually constructed. Power was supplied from a power station built at the oil-fuel depôt.

Meanwhile another floating dock, for light cruisers, had been brought to Cromarty Firth, and, among other things, an existing branch line from Invergordon Station to the pier and the chemical-manure works was adapted to the new requirements by doubling it wherever possible and throwing off sidings to meet the needs of naval stores and depôts as these were built.

So it was that there sprang into existence, apparently out of nothing, and with a speed that might well make men marvel, a great modern dockyard—a Northern Portsmouth—perfectly equipped, and employing over 4,000 workmen ; while alongside there arose a model village, having 126 cottages for the married men among the workers, the remainder of whom found accommodation either in ranges of hutments specially constructed for them or in old hulks on the Firth. Other buildings put up included a hostel for female war-workers and a recreation room.

Altogether the dockyard itself covered twenty-one acres, and the buildings, structures, etc., outside, including cottages, workmen's hutments, naval hospital and oil-fuel tanks, occupied an additional 124 acres.

As for the results secured, Viscount Jellicoe, in stating that by the middle of 1916 the base had attained large proportions, adds : " Work of all kinds was carried out with rapidity and success, including the repairs of the battleships after the Jutland Battle and the great extension in armour-deck protection fitted to ships after the same action."

Rail Transport Requirements.

When the dockyard at Invergordon was in course of construction, every railway siding from Perth onwards was choked with wagons loaded with traffic for Invergordon which the main line of the Highland Railway could not accommodate. Included in that traffic were—in addition to supplies of all kinds for the Fleet—materials for dockyard buildings, for cottages and for hutments ; furniture and household necessaries ; many thousand pounds' worth of machinery ; pipes for a water-supply service extended on three separate occasions, and all the other necessaries for a great naval industry and a new centre of population, each of mushroom growth, and each mainly dependent for the supply of its wants on a railway which had so many other demands to satisfy besides.

Transport of the materials required for building the model village necessitated the laying down of additional sidings north of Invergordon. Eventually these sidings were extended past the harbour for about half a mile to a borrow pit from which a large quantity of soil, etc., was taken for the reclamation carried out at the harbour, where a long timber jetty into deep water was built.

Concurrently with all it was thus doing at Invergordon for the Navy, the Highland Railway had to help in providing, as well, for the needs of the military. Materials for the three camps already spoken of, provisions and supplies for the troops in residence there, ammunition and necessaries of every kind, all went by rail, while in addition to much other passenger traffic, to or fro, special troop trains were frequently run between Invergordon and Southampton or other places in England.

The Northern Barrage.

There were other directions, besides, in which Invergordon and the Highland Railway were to do things of exceptional importance to the scheme of national defence.

On the subject of mine laying Admiral Viscount Jellicoe says in "The Grand Fleet":—

> In 1917, shortly after my return to the Admiralty, I undertook a very extensive mining policy. In the previous year, during Sir Henry Jackson's service as First Sea Lord, a new and much improved mine was designed, the trials of which were carried out after I relieved him. This was one of the replies to the submarine. One hundred thousand of these mines were ordered by me early in 1917 to carry out various schemes for mining the Heligoland Bight and the Straits of Dover. Later in 1917, with the assistance of the United States, provision was made for the large mine-field across the North Sea known as the Northern Barrage. It was not until the large supplies of mines became available in the autumn that really effective results against submarines by mining began to be achieved, although the operations of German surface vessels had previously been hampered to a very considerable extent.

The arrangement with the United States here referred to was, in effect, that she should undertake the construction of large quantities of component parts of mines and ship them to Scotland, where they would be "assembled" for conversion into complete mines. These, after testing, would then be put on American mine-layers and sent to the North Sea. Bases for the carrying out of the assembling, etc., on this side by staffs of U.S. naval ratings were to be set up, one near to Inverness and one near to Invergordon. In the latter case, especially, a great amount of additional transport and other work was thrown upon the Highland Railway Company.

The Northern Barrage—an immense mine-field stretching across the North Sea from the Orkneys to the Norwegian coast, and designed to exclude enemy submarines from the Atlantic—was to constitute the most gigantic undertaking of the kind on record. It is understood that the actual length of the mine-field—practically complete by the time the Armistice was signed—was about 235 miles, and that some seventy

thousand mines were used. America's contribution in the form of mines must, in itself, and apart from all the further labour she undertook in completing and laying them, have been prodigious.

When she started on this task, the United States possessed no factories for the production of mines on the great scale that would be requisite, and neither had she the mine-layers that would be wanted. These, however, were matters of detail readily surmounted by good organisation. Contracts were made with automobile and other manufacturers throughout the United States, the arrangement being that each firm was to devote itself exclusively to the production of some particular part or section of a mine. The orders were so subdivided and distributed that, when once the arrangements and the machinery were in full working order, there would be every prospect of a continuous adequate production of complete sets of all the necessary parts. Orders were also given for the construction on the Great Lakes of a fleet of mine-layers, and a number of merchantmen were commandeered and adapted to the transport of the component parts in regular consignments.

U.S. Naval Bases in Scotland.

The two bases set up were known as " U.S. Naval Base 18," and " U.S. Naval Base 17 " respectively.

Of these the former was alongside Muirtown Basin, situate at the eastern end of the Caledonian Canal, and about a mile north-west of Inverness. The arrangement made in regard to this base was that the component parts of the mines should be brought across the Atlantic to the western end of the Caledonian Canal at Corpach, just off Fort William. There they would be transhipped into motor-lighters having a capacity of about 100 tons, and then conveyed through the canal to Muirtown Basin. In order that the traffic could be carried on without interruption, the canal was lighted and buoyed throughout.

At Muirtown an area which began at the swing bridge crossing the Caledonian Canal and continued alongside the canal for some distance, taking in Muirtown Hotel, the quay and Glen Albyn distillery, and thence extended due north to the junction of the Highland Railway Caledonian Canal Branch with the Highland Railway main line—a total distance of about half a mile—was commandeered by the Admiralty for the purposes of a Naval Depôt officially known as " U.S. Naval Base 18." The Highland Railway Caledonian Canal Branch was taken over for the exclusive use of the base, and its lines were extended—or brought back, in horseshoe fashion—from the said junction so that they would pass through the portion of the area north of the distillery and, also, form an adjoining lay-out of sidings, with gridirons for storage. Alongside the railway lines, at a point near the junction, there were set up a bulk stores, 300 ft. × 100 ft.; an assembling shed, 400 ft. × 100 ft., and a ready-issue store, 400 ft. × 80 ft. Other sheds, stores, works, etc., were also provided on the area, the full extent of which was equal to about forty-five acres. The mine materials, transhipped, by means of

INVERNESS.
U.S. NAVAL BASE 18.
BASE 18
U.S.A. MINING SERVICE
HIGHLAND RAILWAY
MUIRTOWN BASIN
CALEDONIAN CANAL
RIVER NESS
HARBOUR
AMMUNITION STORES
INVERNESS STATION
To PERTH.
THORNBUSH QUAY.
BRITISH BASIN DEFENCE NET DEPT.
NEW STREET GOSPEL HALL
NEW STREET DISPENSARY
HOWARD ROAD
EXISTING HIGH. WAY
CANAL BR.
THE GREAT NORTH ROAD
FROM RIVER CLACHNAHARRY
MORAY FIRTH.

steam cranes, from the lighters into railway wagons at the quay adjoining Muirtown Bridge, were taken along the Highland Railway Caledonian Canal Branch and its extension to the buildings where they were to be dealt with, and, on completion, they were reloaded into railway wagons and transferred to the lighters in which they were to be conveyed to the mine-layers awaiting them in the Kessock Roads at the eastern end of the canal. As these mine-layers were large vessels, the Inverness Firth was dredged from Fort George to Inverness, and the channel was buoyed and lighted in order that they could pass more freely.

The first of the American staff and equipment arrived at Inverness about the beginning of January, 1918, and the unfurling there of the American flag over a United States War Unit at "U.S. Naval Base 18," marked by a little ceremony lacking nothing in impressive simplicity, may be regarded as a noteworthy event in the history of the two nations (see illustration facing page 511). The staff eventually formed a U.S. Mine Force of over 1,000 officers and men. The Glen Albyn distillery was utilised for housing accommodation, and the Muirtown Hotel, alongside Muirtown Bridge, was taken over for sick quarters.

The component parts of the mines began to arrive in the Muirtown Basin by the motor-lighters from Corpach at the beginning of April, 1918, and they continued to be received until the signing of the Armistice in the following November. During this period the sum total of the traffic conveyed along the Caledonian Canal to the depôt (including, besides the parts of mines and their sinkers, other items such as explosives, provisions, naval stores, etc., and including, also, small quantities carried subsequently) was 48,000 tons.

Dalmore and its Story.

"U.S. Naval Base 17," for the further production of mines for the Northern Barrage, was at Dalmore, a village situate on the north shore of Cromarty Firth about three-quarters of a mile from the Highland Railway Company's station at Alness, itself three miles west of Invergordon; and the component mine-parts for this alternative base were, on their arrival from America, landed at Kyle of Lochalsh, the terminus on the West Coast of the Highland Railway Company's Dingwall and Skye branch, and distant seventy-three miles from Alness.

Alness had rendered good service from quite the early days of the war and long, therefore, before there was any idea of establishing a U.S. Naval Base in her immediate vicinity. These conditions were mainly due to the fact that Alness was so near to the encampments being set up at Invergordon and Nigg. It became a common occurrence for Alness to be required to accommodate on her sidings 100 wagons of naval stores and camp-materials which could not then get any farther. The sidings were, indeed, found of great advantage in relieving somewhat the congestion that became chronic at Invergordon; though when, as frequently happened throughout the war-period, Alness had to deal

with six trains at once, the trains crossing loop and sidings, there was often no little difficulty in fitting things in.

Half a mile south of Alness there was opened, in May, 1916, a ballast pit designed to supply material for Invergordon dockyard. This material was to be conveyed to Invergordon by special trains. There were then already about thirty-five other trains passing through Alness station every day, and the specials with the ballast were unable to make more than three journeys per day. They continued to run until the end of January, 1917, and by that time the amount of material they had conveyed for dockyard purposes was equal to about 25,000 tons.

In June, 1916, an engineering shop was erected at the extreme end of Dalmore siding (to which further reference will be made a little later) for the accommodation of workers who were to shape and bore plates to be fixed on the decks of ships which had taken part in the Battle of Jutland. This meant that the Highland Company had to convey to Alness and deliver on to the said sidings—in addition to so much other traffic—2,000 tons of plates from the south.

In regard to the further great business which was to follow, the fact should be mentioned that the special advantages offered by Dalmore as a base for the construction, storing and distribution of mines for the North Sea were (1) its proximity to Invergordon and Cromarty Firth, the shipment of the complete mines being thus greatly facilitated, and (2) the existence there of a great modern distillery, capable, like that at Glen Albyn, of ready conversion into a mine-assembling depôt and store.

Of this distillery the Admiralty took possession in October, 1917; and the first big task to be done in connection with it was that of "shifting" the whisky stored in its bonded warehouses. The whisky was contained in no fewer than 6,500 casks, estimated to hold over 300,000 gallons. About 4,500 of the casks were removed by rail to a distillery at Edderton, twenty-one miles north of Alness, and this removal involved the running of either one or two special trains, taking about twenty-two wagon loads, day by day, for a period of three weeks. The remainder of the casks were conveyed by motor lorries to a distillery at Novar, four miles to the south.

The whisky having been cleared away, the conversion of the distillery into workshops and mine stores was begun, while alongside there were constructed ranges of hutments and sheds, extending over about ten acres of ground, for the accommodation of the staff to be employed at the base or for other purposes. The provision of these hutments and sheds involved, in itself, the transport of 7,000 tons of materials by rail.

Measures were also taken to ensure the provision of adequate rail facilities. The distillery had been connected with Alness station by a siding which, though serving its original purpose, terminated at too high a level to suit the requirements now to be met. Accordingly, from a point on the main line of the Highland Railway situate about midway between Alness and Invergordon, and known as Belleport, there was

Photo by] *[Munro & Son, Dingwall.*

ROCK CUTTINGS ON THE HIGHLAND RAILWAY, NEAR KYLE OF LOCHALSH.

[To face p. 540.

MEN-OF-WAR IN CROMARTY FIRTH.

[To face p. 541.

constructed a new siding which fell by easy gradients to the level of the mine depôt at Dalmore. From Kyle of Lochalsh the mine traffic received from America would first run over the Dingwall and Skye branch to Dingwall; there it would pass on to the main line, along which it would continue as far as Belleport Junction, there to be switched off on to the Dalmore siding and so reach its destination.

There was, at first, no pier at Dalmore, and it was decided that until one could be constructed the mines put together and tested at Dalmore should be sent to the pier at Invergordon for shipment to the North Sea. This made it necessary that a "relief line" should be laid along the shore of the Firth from Dalmore to the Naval Yard at Invergordon, a distance of about four miles. To meet the urgent demands for railway material in connection with this particular line and, also, (1) for a line on the pier to be erected at Dalmore, (2) for the needs of Invergordon dockyard, and (3) for the sidings at Muirtown already spoken of, the Highland Railway Company closed their Buckie and Keith branch, (Elgin), lifted the rails therefrom—about twelve and a half miles altogether—and gave them over to the Admiralty for the purposes stated.

The "relief" or "shore" line thus put down by the Admiralty, and worked by them with engines and wagons borrowed (through the Railway Executive Committee) from the railway companies, was laid along one side of a public road leading from Dalmore to Invergordon. Connections with Invergordon station and the Highland Company's Invergordon Harbour Branch were provided. The line was, also, connected with the sidings at Belleport Junction and received therefrom the Kyle of Lochalsh traffic, which was then taken on to the Dalmore depôt by the Admiralty engines.

The construction of the pier inside the Dalmore base was not begun until about July, 1918, and it was not ready for use until the end of that year—subsequently, therefore, to the signing of the Armistice. Preceded by an earth embankment 700 yards in length, with a facing of stone 3 ft. deep, a width of 30 ft., and providing for two sets of rails, the pier, built of timber piling, extended from the shore a distance of 220 yards, had itself a width of eighteen yards, accommodated four sets of rails, and terminated at a point in Cromarty Channel where 32 ft. of water at L.W.O.S.T. was available for vessels brought alongside. The building of the pier involved the rail transport of some 13,000 tons of materials conveyed in, approximately, 2,000 wagons. Pending the completion of the work, the many thousands of mines which had been put together at Dalmore had had to be loaded into the railway wagons loaned to the Admiralty, taken to Invergordon pier, and there transhipped into the lighters awaiting them outside Invergordon harbour. The Dalmore pier nevertheless rendered good service later on, when the Northern Barrage was being cleared away, as a place where the mines brought in could be landed and where, also, material returned from the Fleet could be received. Some degree of relief was thus afforded to the state of congestion which had so long prevailed at Invergordon harbour.

Eventually the Dalmore base, with its buildings, hutments, railway sidings, pier, etc., comprised a "reservation" (as it was called) extending over a total of seventy-eight acres. The whole of this area was strictly guarded by sentries.

Kyle of Lochalsh.

Whilst all the preparations thus far narrated were being carried out on the shores of Cromarty Firth to assist America's efforts in respect to the Northern Barrage, much was also happening at Kyle of Lochalsh, where the traffic would be received, and in connection with the railway lines along which it would pass.

In the first place, the sixty-three miles of line between Kyle of Lochalsh and Dingwall, together with the pier and all the other transport facilities at Kyle, were taken over by the British Admiralty for the purposes exclusively of the American mine-traffic, except so far that the Highland Railway was allowed to run one train a day for passengers and mails. All goods traffic by this route for Lewis, Skye and the Outer Islands was stopped. Whatever was sent had to be worked from Oban or Glasgow. At Kyle of Lochalsh the sidings on the pier were adapted for the new traffic; the Highland Railway Company's steam and hydraulic cranes were dismantled to make room for cranes specially suited to the fresh tasks to be undertaken; storage sidings, the laying of which involved much rock excavation, were provided; the Station Hotel, belonging to the Highland Railway Company, was utilised by the Admiralty for offices and quarters in connection with the work of the Senior Naval Officer at Kyle, and hutting accommodation was erected for U.S. naval ratings. A new train-crossing loop was constructed on the summit of the branch at Loan to facilitate working on the heavily-graded 12-mile section between Achnashellach and Achnasheen, and water supply for the locomotives was provided at certain additional stations.

The American naval ratings by whom the work at Dalmore was to be carried on began to arrive in January, 1918. Further contingents followed, in parties of from 50 to 100, until about May, when a maximum of some 1,700 was reached. The first of the mines received at Kyle of Lochalsh from America came early in May, 1918. The supply was continued until the following November.

For the purposes of the traffic between Kyle of Lochalsh and Dalmore, the Highland Company arranged, through the Railway Executive Committee, for the loan of four locomotives from the London and South Western Railway and 150 12-ton coal wagons from the South Eastern and Chatham. Four brake vans were also borrowed from other companies. The flow of traffic depended mainly on arrivals at Kyle of the vessels from America. This occurred about once a fortnight. Three or four special trains conveying the material brought would then be run each day for a period of seven or eight days. The specials had to be limited to eleven wagons each, owing to the severe gradients and sharp curves on the Skye branch—a line on which deep and rugged cuttings

IMPORTANT RAILWAY NOTICE

NOTICE IS HEREBY GIVEN

that on and after MONDAY, 18th FEBRUARY, 1918, the Highland Railway Company's Pier at Kyle-of-Lochalsh as well as the Dingwall and Kyle-of-Lochalsh section of the Highland Railway will, as regards traffic for Lewis, Skye and the Outer Islands, only be available for Passengers (with their personal luggage), Mails, Perishable traffic and Government stores.

The routes via Mallaig and Oban are not available, and all other traffic for Lewis, Skye and the Outer Islands will be conveyed via Glasgow.

BY ORDER,

February, 1918. THE RAILWAY EXECUTIVE COMMITTEE.

TRAFFIC WITH THE HEBRIDES AND NORTH-WEST COAST OF SCOTLAND.

NOTICE IS HEREBY GIVEN

that the Highland Railway Company's route via Kyle-of Lochalsh is closed for Traffic by Merchandise Trains with Lewis, Skye, and the Outer Islands, and places on the Mainland, except for Perishable traffic (in lots not exceeding 1 cwt.), and Government Stores for Broadford, Raasay, Portree, Stornoway, Tarbert (Harris) and Lochmaddy.

The Passenger Train service via Kyle-of-Lochalsh is still available for the conveyance of Passengers (with their personal Luggage), Mails, Perishable Traffic (in lots not exceeding 1 cwt.), and Government Stores for Broadford, Raasay, Portree, Stornoway, Tarbert (Harris) and Lochmaddy.

The routes via Mallaig and Oban are open for Merchandise and Passenger Train Traffic, but the Steamer Services are limited.

BY ORDER,

March, 1918. THE RAILWAY EXECUTIVE COMMITTEE.

JAS TRUSCOTT & SON LTD LONDON

TRAFFIC RESTRICTIONS IMPOSED TO FACILITATE THE TRANSPORT ACROSS SCOTLAND OF U.S. MINES FOR USE IN THE NORTHERN BARRAGE.

through rocks rising, in places, to a height on each side of seventy feet, alternate with twists and turns so sharp and so numerous that the traveller loses all sense of geography and seems to be going to every point of the compass in the course of only a few miles.

The traffic carried included much more than the component parts of mines for the North Sea. The boats from America brought, also, machinery and appliances to be used in connection with the mines; equipment for the U.S. naval bases; supplies for the mine-layers; food for the men at Dalmore and Inverness; equipment for the hospitals opened in Scotland for members of the U.S. naval forces; motor-cars; hydraulic chairs for barbers' saloons conducted on trans-Atlantic principles, and among a variety of other luxuries—or *necessaries*, from the point of view of the American citizen—a generous provision of chewing-gum!

The total amount of mine or other traffic from America received at Kyle of Lochalsh between May, 1918, and the following November, when it ceased, was 32,800 tons. Of this total about 24,000 tons were conveyed to Dalmore in, approximately, 400 special trains, each consisting of ten or eleven vehicles. In addition thereto, some 3,000 tons of stores were carried from Kyle of Lochalsh either to Inverness or to Alness.

The working of the traffic in connection with the rail transport of the mines would have been a great undertaking under any possible conditions. On what was mainly a single-track line, with so many heavy gradients and sharp curves, and often so greatly congested, it became exceptionally so. The traffic was, nevertheless, carried throughout with the greatest smoothness and dispatch, and no hitch or accident of any kind occurred.

CHAPTER XXXIX.

GRANGEMOUTH IN WAR-TIME.

In 1867 the Caledonian Railway Company, being anxious in the interests of their expanding traffic to obtain control over a suitable port on the East Coast of Scotland for the shipment to the Continent and elsewhere of coal from the Lanarkshire coal-fields which they were then already serving, obtained Parliamentary powers to acquire possession of the docks at Grangemouth. Those docks were then on a comparatively small scale; but, in proportion as the traffic increased, and having regard to the prospects of still further expansion, the company carried out from time to time schemes of improvement on which they expended, altogether, over £2,000,000. The docks as they exist to-day comprise the original dock (now known as the "Old Dock"), which has an area of 4½ acres; the "Junction Dock," 3¼ acres; the "Carron Dock," 20 acres, and the "Grange Dock," 30 acres. The total length of quayage inside the docks is about 6,000 lineal yards. In addition there is, inside the sea lock, a basin 10 acres in extent. The docks are equipped with hydraulic coal-hoists, hydraulic cranes and capstans; commodious shed accommodation is provided, and the whole is lit by electricity.

Prior to the war the principal traffic dealt with at the port was coal from the pits of Lanarkshire and Stirlingshire sent to the Continent, and timber, pulp and esparto grass brought from the Continent. There was, also, a considerable traffic in general merchandise and pig-iron alike with the Continent and with London, Hull, Middlesbrough and other East Coast ports.

Eight days after the declaration of war by this country, a military guard was put over Grangemouth Docks, access to which was thenceforward refused to all persons not provided with a military pass. On November 13th, 1914, the port was taken possession of by the Government, and from this time no merchant vessel was allowed to come within one mile of the Forth Bridge, either from the Eastward or from the Westward, without first obtaining permission, and every vessel was required to have an authorised pilot on board. On December 11th, 1914, the last merchantman in the docks sailed, and Government vessels were then alone allowed to enter or leave the docks.

In normal times arrivals and departures had been limited to a period of seven hours each tide, namely, four hours before and three hours after high water. In order, however, to prevent delay to H.M. vessels,

it was found expedient, as a war measure, to withdraw this restriction and allow of their entrance or departure at any state of the tide.

The port was made use of, by the Government and the War Office, for storage purposes, and, by the Admiralty, not only for the coaling of the Fleet but, also, among other purposes, as a mine-depôt, a victualling yard, and an oil-storage depôt.

At different times between March and June, 1915, a total quantity of close on 8,000 tons of Government flour was stored in seven sheds in the docks, the flour having been conveyed there by rail from various flour mills in England. It remained in store for periods ranging from three months to seven months, and was then reloaded into the railway wagons and sent elsewhere. In 1915 and 1916 the War Office utilised five of the dock sheds, several large timber sheds and some of the available land for the storage of hay, of which 19,000 tons were brought in by rail and 14,700 tons were afterwards sent out.

Welsh coal for the fleet began to arrive at Grangemouth on August 10th, 1914, and from that time huge quantities were received either for immediate shipment or to form reserve supplies, stored on the ground at various points around the docks.

All the work in connection with the handling of the coal was done by the Admiralty agents at Grangemouth. The total quantities dealt with down to April 30th, 1919, were :—

Received	2,306,000 tons.
Shipped	2,092,000 ,,
Stored on ground	333,000 ,,
Reloaded	246,000 ,,

The shipment of ammunition and mines to and from the port of Grangemouth began in March, 1915. The consignments imported came principally in vessels from Crombie and Rosyth. Those that were not stored at Grangemouth were either sent on by rail to various depôts or shipped to the Fleet in the Firth of Forth. The exported ammunition and mines were largely received by rail from Government depôts in England and were shipped on board mine-layers and other Government vessels.

Imports and exports were as follows for the periods mentioned :—

Year	Ammunition and Mines. Imported. Tons	Exported. Tons
1915	2,445	11,442
1916	13,391	4,608
1917	12,017	5,426
1918	5,603	22,128
1919 (To April 30)	5,356	1,223
Totals	38,812	44,827

The traffic by rail in ammunition and mines amounted to 57,600 tons received and 45,875 tons dispatched, a total of 103,475. These figures

include both Caledonian and North British traffic into and out of the docks, where all the railway working is done by the former company.

Concerning the mine traffic, the following additional details may be of interest.

The Royal Naval Mining Depôt at Grangemouth was instituted in January, 1916, when the three largest sheds in Grange Dock—all belonging to the Caledonian Railway Company—were requisitioned by the Admiralty for the storage of mines, sinkers, etc., these being removed as wanted and, with the help of the company's hydraulic cranes, placed on board vessels of the destroyer class of mine-layer. At this time the depôt was in charge of the Officer-in-Charge at Crombie Ammunition Depôt. In June, 1917, an Engineer-Commander took charge. He and his staff were accommodated in the Caledonian Company's premises within the Grange Dock. A month later, operations were begun to convert the largest of the three sheds into a workshop for the assembling of mine parts, the testing of mines, and various other operations in connection with them; though this new departure was not fully developed until the end of the year. By that time an area in the Grange Dock extending to 31 acres had been acquired from the company, and six large sheds were erected thereon by Admiralty contractors, lines of railway being also laid to connect the sheds with the Caledonian Railway system. About 85,000 tons of slag and ashes were required to bring the land up to the required level. Three of the new sheds were used for the assembling of mine parts. The others were utilised for the storage of mines ready for shipment on the mine-laying vessels. The sheds became available for use in April, 1918. Several dock sheds were also converted into Admiralty workshops; spacious dining halls, laboratories, instruction rooms, etc., were erected, some additional acres of ground being taken over for the purpose, and before long the Admiralty controlled, within the limits of the Grangemouth Docks, an exceptionally large and well-equipped mining depôt where hundreds of men and women were employed on work in connection with the mines.

From January 1st, 1918, until well on into 1918 the Caledonian Company, at the instance of the Admiralty, ran workmen's trains between Grahamstown, Grangemouth and the mining depôt for the conveyance of the workpeople. At one time four trains were run daily in each direction. Special platforms were erected in or near to the docks for the accommodation of the passengers.

Meanwhile, Rear-Admiral L. Clinton Baker, with a staff of about 600 men, had arrived to take charge of the Mine-laying Squadron operating from Grangemouth, and 1,500 lineal yards of quay, with hydraulic cranes, were placed at his disposal for handling the mines. In order to facilitate the operations, the Caledonian Company dredged these quay berths to the fullest extent. Admiralty contractors dredged in the river Forth, outside the dock entrance, a deep channel 1,500 yards long and 250 yards broad. The course of this channel was clearly defined by lighted buoys and beacons. The docks being lighted by electricity, the Admiralty

were given the necessary electric current for their extensive signalling.

The mines, etc., were received at Grangemouth by rail. Most of the traffic came from England. The wagons containing the mines arrived at the Caledonian Company's marshalling yard alike by Caledonian and by North British trains. They were then taken by Caledonian engines and men to the exchange sidings, where they were handed over to the Admiralty, who sent them on to the depôt with their own engines and men. After being inspected and fitted up in the depôt, the mines were shipped on to the mine-laying vessels either from railway wagons or from the dock sheds. The Admiralty had four engines and 200 wagons to assist in working the traffic. Ample dock accommodation was provided for the collier, transport and oil vessels attendant upon the mine-laying squadron.

The total tonnage of the mine-traffic received at Grangemouth—that is to say, mines, sinkers and appliances connected therewith—was 19,150 tons. The principal forwarding places were: Attenboro' (550 tons), Bolton (360 tons), Dagenham (4,680 tons), Fareham (1,100 tons), Faversham (860 tons), Littlemore (6,570 tons), Portsmouth (400 tons) and Woolwich (1,180 tons). Not the whole of the traffic was shipped direct from Grangemouth, about 2,790 tons being sent on mainly to places in the North of Scotland. It is difficult to estimate with any degree of exactitude the number of actual mines represented by the tonnage mentioned, but the sum total of those passing through the docks at Grangemouth under the conditions here described would probably be not far short of 60,000.

In June, 1916, an Admiralty Victualling Yard was opened in Carron Dock, five sheds and some offices being taken over, either then or subsequently, for the purpose. The work in connection with the depôt was done by a local firm of stevedores, who employed forty hands thereon. Up to the end of May, 1919, over 51,000 tons of foodstuffs and stores for the East Coast Main Fleet had been brought to the Victualling Yard by the Caledonian and North British routes, in addition to 9,000 tons which had come by sea.

As regards the utilisation of Grangemouth Port for the supply of oil fuel to H.M. Fleet, the first step in this direction was the taking over by the Admiralty of the British Petroleum Company's oil installation in Grange Dock. The next was the conversion into oil-tank vessels of a fleet of boats in use on the Forth and Clyde Canal, which, as the property of the Caledonian Railway Company, had already passed under Government control in common with other railway-owned canals. By the time that these preparations had been made, some oil ships from overseas began to come up the Clyde as far as Bowling, ten miles below Glasgow. Bowling is the western terminus of the Forth and Clyde Canal, and here, as the oil vessels lay in the outer harbour, the oil they had brought was pumped direct from them into the canal boats—or, rather, the improvised oil-tank vessels—lying at the west end of the inner basin. When full, the vessels were towed by steam lighters along the thirty-five miles of canal from Bowling to Grangemouth Docks. There the oil was pumped

out of the boats into the tanks of the British Petroleum Oil Company, and was subsequently sent out to the Fleet as required. To facilitate the passage of the boats through the canal, the locks and bridges between Bowling and Grangemouth were double-manned from April 9th, 1918, to January 31st, 1919.

Under these arrangements there was conveyed by boat from the Clyde to Grangemouth Docks a total of 137,514 tons of oil. So much importance, however, was attached to the provision of oil fuel for the Fleet that the Admiralty decided, early in 1918, to lay an oil-pipe from Old Kilpatrick, on the east of Bowling, to Grangemouth Docks in order that the oil, pumped along this pipe for the entire distance, could be obtained in greater volume and less time.

Begun on March 9th, 1918, the work was carried out by the British and the United States Governments in combination, this country being responsible for the excavation, while the United States provided a Naval Pipe-line Unit for the laying of the pipes. These were eight inches in diameter. The pipe-line was carried along the towing-path of the canal until it had been brought within about a mile and a half of Grangemouth. There it was diverted to the bank of the Grange Burn, whence it continued along the Caledonian Company's dock property to the Admiralty Oil Installation at the new power-house, Grange Dock. Pumping stations were provided at either end of the line, and two intermediate stations were also arranged. At Grangemouth the steam for working the pumps was generated in the Caledonian Company's hydraulic power-house. From the Admiralty Installation the oil was pumped, as required, into oil-tank vessels moored alongside, and so conveyed direct to the Fleet.

The difficulties in the way of constructing the pipe-line will be better understood if the fact is mentioned that the summit level of the Forth and Clyde Canal is 158 ft. 6 in. above Ordnance datum. The pipe, following the towing-path, had to be taken up to this summit level before it could be brought down again to the level of the Grangemouth Docks. In the circumstances it was not found possible to begin the pumping until November 1st, 1918, or only ten days before the signing of the Armistice. Yet the line proved its practical value, all the same, the amount of fuel oil pumped through it between the date mentioned and the end of April, 1919, being about 220,000 tons. If we add to this figure the quantity carried by the oil-tank canal boats, we find that the total weight of fuel oil conveyed from the Clyde to the Forth along or across the property of the Caledonian Railway Company for practically the entire distance was no less than 357,514 tons.

A regular traffic in timber was dealt with at Grangemouth for the Board of Trade Timber Control Department. The total quantity received at the port by rail, apart from 2,700 tons coming by water, was, approximately, 30,000 tons. The timber was mainly stored either on ground belonging to the Caledonian Railway Company situate around the docks or, in the case of timber of the heavier class, in the timber basins.

Following on the signing of the Armistice, a very large number of "liberty" men from the Grand Fleet got Christmas or New Year leave, and were conveyed by tugs to Grangemouth Docks, where they were entrained and dispatched to destinations in England by special trains as under :—

Date	Number of trains.	Number of officers and men.
December 6th, 1918	6	3,479
,, 17th, ,,	5	2,589
,, 20th. ,,	1	266
,, 30th. ,,	8	4,094
January 10th, 1919	7	3,655

The "liberty" men returned by special train on the expiry of their leave, and were detrained at the docks.

On December 25th, 1918, the Commander-in-Chief intimated that the Admiralty had approved of the re-opening of the port to commercial vessels so far as could be done without interfering with naval requirements. In March, 1919, the Admiral and his staff were withdrawn. Grangemouth then finally reverted—as well as it might—to its *status quo ante bellum.*

CHAPTER XL.

ADMIRALTY WORK AT IMMINGHAM.

JUST over two years before the outbreak of war, their Majesties the King and Queen opened at Immingham, on the southern bank of the Humber and about equidistant between Grimsby and Hull, a new dock which, constructed by the enterprise of the Great Central Railway Company, was to render much service to the national cause in the World-Conflict so soon to follow.

As a general rule, even the most important of docks start with small or comparatively small beginnings and attain their eventual proportions by instalments carried out over a more or less prolonged series of years; but the Immingham Dock established a record by being probably the largest work of the kind ever opened straight away as a single undertaking. In other words, it was practically fully grown at the time of its birth. How substantial, too, its proportions were will be easily realised with the help of a few figures. The dock estate itself comprises an aggregate of 1,000 acres, with a river frontage of about one mile and a half, a total length of two miles and a half and a breadth of one mile. The King's Dock has a water area of forty-five acres, the depth thereof varying from thirty to thirty-five feet. There is, also, a timber pond of six acres and a graving dock 740 ft. by 56 ft. by 22 ft. on blocks. The dock equipment includes a ferro-concrete grain-elevator which has a capacity of 15,000 tons; eight hydraulic coal-hoists; a plentiful supply of cranes, with a capacity ranging from 30 cwts. to 50 tons; a mineral quay; a timber quay; goods transit sheds, wool warehouses, bonded warehouses and general stores; 117 miles of running lines and sidings and all the other necessary facilities of a great modern port of the most modern and up-to-date type.

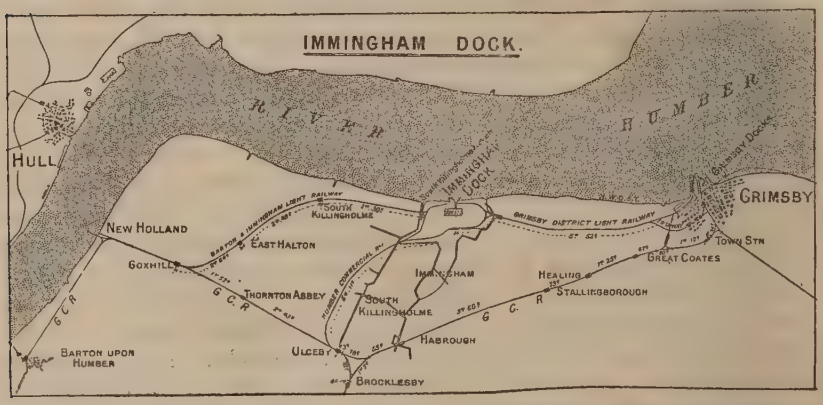
Constituting the geographical port for the coal-fields of South Yorkshire, Derbyshire and Nottinghamshire and for the iron and steel trades of the Frodingham district, and most conveniently located for the wool trades of Yorkshire, Immingham Dock started with every prospect of a great commercial future; but the Admiralty, on the outbreak of war, speedily recognised and made full use of the great advantage which, in many ways, it also offered to themselves.

The military authorities first utilised the large transit sheds and grain warehouse for the mobilisation of three battalions of the West Riding Territorial Regiment, some 2,200 troops and 180 horses being quartered there by August 11th, 1914. Then, shortly afterwards, the dock was

selected by the Admiralty as headquarters for the Admiral of Patrols, who flew his flag in H.M.S. *St. George* until the establishment of a large shore depôt which, for the remainder of the war, remained under the command of the respective Rear- and Vice- Admirals Commanding the East Coast of England.

Immingham became, also, not only a naval base but a mining base having its own flotilla of mine-laying destroyers for operations in the North Sea, though not necessarily in connection with that Northern Barrage which could be better served from Grangemouth. The part thus played by Immingham as a mine-laying base, may, perhaps, be more conveniently dealt with first, having regard to what has already been said in Chapter XXXIII concerning the rail transport of mines.

The construction at Immingham of stores specially adapted to the housing of mines was begun by the Admiralty in the latter part of 1916; but the buildings were not in a sufficiently finished state for use to be



made of them when the issue of mines began at the port in February, 1917. In this absence of adequate storage facilities, the mines and sinkers —then of the old type—were transferred on arrival by rail from contractors' works direct to the mine-laying vessels in dock, to lighters, or to storage-trucks (otherwise railway wagons no longer serviceable for use on the running lines). In August or September, 1917, the new type of British mine (manufactured on the mass-production system), together with sinkers and components, began to arrive in great numbers at Immingham. Transit sheds having a floor space of over 18,000 square yards had been placed at the disposal of the Naval Mining Engineer Officer by the Great Central Railway Company for the accommodation of mines, sinkers, etc., but it was also found necessary to adapt one of the new Admiralty stores—a structure 200 ft. by 90 ft.—to the purposes of a testing and assembling establishment. Within a period, also, of six months, the Admiralty mining staff, which, when the start was made at the port in February, consisted of a single representative of the department, had

SECTION OF SIDING ACCOMMODATION AT IMMINGHAM DOCKS.
(Coal Hoists in the Distance.)

[*To face p.* 552.

Coal awaiting Shipment at Immingham Dock.

[To face p. 553

increased to 300. By the autumn of 1918 there had been a further expansion to nearly 800. Of these, about 500 were employed in the testing and assembling depôt and about 300 on transport and store-keeping duties. Most of the staff lived at Grimsby and travelled to and fro on the Great Central Company's electric railway serving the two ports.

Mines and sinkers which, on arriving at Immingham, could not be at once removed into the assembly shop were either transferred, still in the wagons in which they had been brought, and as fast as the available facilities permitted, to the yard or to the storage-wagons serving as movable stores on sidings or were dumped in huge stacks near the mining depôt. Such, also, was the abundance of supplies delivered at Immingham, that there was one occasion, at least, when 1,000 trucks loaded with mines and sinkers—that is to say, about 400 wagons from the running lines and 600 storage-wagons—were waiting for their contents to be dealt with in the assembling depôt. The stock thus on hand was in addition to the considerable number of assembled units in the Admiralty and Great Central stores utilised for the purpose. Great quantities of mines and sinkers, in the non-assembled stage, were taken on in the railway wagons to an expanse of flat ground, two or three miles out, from which a million tons of soil had been excavated for the building up of embankments or the construction of gravity sidings, etc., in connection with Immingham Dock. The transfer from running wagon to storage wagon, from storage wagon to assembly shop, from shop to store, and from store to the mine-layers coming to Immingham for them, for use in the Heligoland Bight, on the coast of Jutland, or elsewhere, naturally involved a considerable amount of labour.

From all this it will be seen that a really great work in connection with the transport, completion and issuing of the mines which were to have so material an influence on the naval situation [1] was done at Immingham, and more particularly so during the last year of the war. When, in fact, the Armistice was signed, Immingham's available stock of mines and sinkers was still numbered by tens of thousands.

Much was done, also, in the shipment of depth charges on trawlers and torpedo-boat destroyers. Immingham was further utilised by the Admiralty as a base for providing submarines with oil and other supplies, and for the carrying out of repairs, a staff being stationed for this purpose on the "mother ship" in the docks. Immingham was, also, a depôt for balloons employed in the detection of enemy submarines. In the later stages of the war it became, in addition, an American seaplane depôt.

Records of the very heavy tonnage of mines, sinkers, naval stores, etc., brought to Immingham on Government account are not available;

[1] In "The War Cabinet: Report for the Year 1918," it is said:—"The policy of intensive mining of the Heligoland Bight Area, which was pursued during 1918 with great vigour, probably had great effect in bringing the war to a close; the constant losses of small craft in this area, combined with a general sense of insecurity, certainly contributed largely to the demoralisation of the German Navy, and culminated in open mutiny."

but the tonnage of such traffic dispatched from the dock between the beginning of the war and the eventual dismantling of the mining depôt and other Admiralty installations showed a total of over 130,000 tons.

Of salvage material—shell cases, boxes, and much more besides—there were imported from France, and dealt with in a large salvage depôt that was organised, no fewer than 21,000 tons. Large quantities of coal were shipped. Of iron-ore wanted more especially for the manufacture of munitions of war there were imported close on 229,500 tons. Of grain, 80,000 tons were handled on account of the Landed Grain Committee, and of pit props and timber 52,000 tons were imported either for the Timber Controller or for timber merchants.

Immingham, again, divided honours to a certain extent with her sister-port of Grimsby, also owned by the Great Central Railway Company.

In 1917, when the urgent demand for railway material in France was causing great congestion at a number of British ports, Immingham and Grimsby were able to afford them substantial relief, the amount of such material shipped therefrom being 80,000 tons.

Prior, also, to 1917, considerable shipments of hay to France were made from ports on the west coast ; but with a view alike to saving time and to reducing the element of war risks, an extensive hay-pressing plant was installed at Grimsby, and hay and other supplies were sent, partly from that port and partly from Immingham, to the extent of 190,000 tons.

Including coal, the total amount of traffic of all kinds shipped from or unloaded at Immingham during the war period was over three and a half million tons.

Nor do we come even here to the end of Immingham's war record.

So useful, from a naval point of view, were the docks found that there were between 25,000 and 26,000 occasions during the course of the war when they were entered by vessels under Admiralty control, included therein being battleships, cruisers, monitors, and other ships of a large type.

A number of prize cargoes were dealt with on behalf of the Admiralty Marshal.

The dry dock and repairing shops of the Humber Graving Dock and Engineering Company took under their charge more than evens hundred Admiralty and other vessels in need either of repairs or of overhauls of a more or less extensive nature, in addition to a very large number of vessels on which repairs were effected without any need for dry-docking.

Finally mention should be made of the fact that two sea-going tugs belonging to the Great Central Railway Company assisted the naval authorities in the river or at sea, as required, and rendered successful salvage services to naval or commercial vessels on more than forty occasions.

CHAPTER XLI.

HARWICH PORT AND PARKESTON QUAY.

Formed by the combined estuaries of the Essex Stour and the Suffolk Orwell, and offering a considerable expanse of sheltered inland waters accessible from the sea at all states of the tide, Harwich Port began to play an important rôle in British naval history as far back as the year 1340, when Edward III embarked there with a British fleet of 260 sail on his encounter with the French off Sluys. Later on, and down to 1836, when the mails were transferred to Dover, Harwich was the most important place on the East Coast for communications with the Continent; but it suffered from the inroads of the sea, and, although Defoe described it as able to receive the "biggest" ships of war and "the greatest number that ever the world saw together," the day was to come when it was unequal to receiving the largest warships of modern times. The decline of Harwich as a naval port set in accordingly. It gained, however, a high reputation as a commercial port on becoming the headquarters of the steamship services of the Great Eastern Railway Company between this country and the Continent, and that reputation was especially enhanced by the company's creation of Parkeston Quay at a point on the river Stour which, although about a mile, by water, to the west of the borough, is still within the limits of the Port of Harwich. In 1914 six services with the Continent were being operated from Parkeston Quay either by the Great Eastern or by other home or foreign companies.

With a shifting, in or about 1911, of the balance of naval power from the Mediterranean to the North Sea, the Admiralty recognised the need on the East Coast, somewhere between Dover and the Firth of Forth, of a naval base which, supplementary to that at Rosyth, would be specially designed to serve as a headquarters for light cruisers, destroyers, submarines, etc., operating in the North Sea; and the port of Harwich, by reason of its geographical position and the other advantages it offered, seemed to be well adapted to the desired purpose. Certain improvements in the port had recently been carried out, and there was every justification for the choice eventually made of Harwich both as a naval base south of Rosyth and as a harbour of refuge, in case of need, for such naval vessels of the smaller type as it would accommodate.

So it was that Harwich became the headquarters of the First Destroyer Flotilla of the First Division of the Home Fleet, consisting of a depôt ship, a first-class twin-screw protected cruiser of 9,000 tons, three unarmoured cruisers of 3,300 tons each, and twenty-five torpedo-boat

destroyers of the then latest types and ranging in size from 700 to 1,000 tons. The flotilla included some of the fastest ships in the British Navy—vessels equal to a speed at sea of over thirty knots an hour. Each cruiser carried a complement of about three hundred men and each destroyer had a crew of about one hundred. In the spring and autumn the flotilla left Harwich for about eight weeks' battle practice on the north-east coast of Scotland, and in the intervals there were firing and tactical exercises, extending over several days at a time, in the North Sea. Harwich was, also, at this time, the headquarters of a flotilla of nine submarines, together with the parent ship *Mercury* and the sea-going ship *Thames*, a second-class cruiser of 4,000 tons. There was further to be taken into account the existence, on the other side of the Stour, and immediately facing Harwich, of the Shotley Royal Naval Training School, where some 1,400 boys were under training.

Towards the end of 1911, and under these conditions, Harwich had taken on a fresh lease of life as a naval port of great prospective utility. Significant of much that was happening was the fact that the running on the Great Eastern of " seamen's specials " for the conveyance to London of men on week-end leave had become a well-established and greatly-appreciated institution. By March, 1912, the new naval base had acquired a second flotilla of about twenty-five destroyers, with attendant cruisers, scouts and depôt or repair ships ; the Admiralty had provided a floating dock capable of accommodating two destroyers side by side, and plans were being prepared for additional dredging operations for which the Admiralty had undertaken to make a grant.

The Great Eastern Railway Company now thought it time, in the interests of the steadily-increasing naval population, to re-open their hotel at Harwich, which had been closed for a period of five years ; and, having regard to all that was to follow, on the outbreak of the war, the fact may be recalled that on the occasion of the said re-opening Lord Claud Hamilton, the Chairman of the company, who presided at the luncheon given, said :—

> It would be agreed that the Admiralty had made a wise choice in selecting Harwich Harbour as a naval base of the torpedo fleet, since it seemed to be considered that, if any trouble did occur to this country, it would come from the east rather than from the south. The perfect protection afforded by the harbour made it an exceedingly suitable place for one of our great naval bases.

Mr. H. K. Newton, M.P., spoke of the port as " easily the best harbour of refuge on the East Coast," and Sir Fortescue Flannery, M.P., declared that " a great national movement had been initiated by the development of Harwich."

While taking over, on the outbreak of war, most of the Great Eastern Railway steamships, the Admiralty did not adopt a like procedure with regard to Parkeston Quay, which continued to be managed by the railway company throughout the war period. All the same, the quay, with its 2,800 ft. of quay space, affording berths for nine steamers at one time ;

its commodious sheds ; its electric and hydraulic cranes, capable of lifting weights ranging from 30 cwts. to 30 tons ; its mechanical means for loading coal into steamers ; its railway station, with spacious waiting-rooms and adjoining hotel, and its direct rail communication with London (only about seventy miles distant), with the Midland and the Northern Counties, and, through them, with all parts of England, Wales and Scotland, was ready for immediate service for the purposes of the war ; and it was, in effect, occupied by the Admiralty as required, there being occasions when the facilities it afforded were entirely utilised by the naval authorities.

Harwich and Parkeston thus became practically a single establishment from a naval point of view, and, with the Forces stationed there, were to take a large share in the British Navy's control of the North Sea. Such, indeed, was the importance of the work carried on that Harwich, including Parkeston Quay, Dovercourt Bay, Felixstowe and Trimley, was declared a Special Military Area in October, 1916, and remained so until December 2nd, 1918.

The light cruisers (strengthened by the addition of others) and the two flotillas of destroyers were required to perform a wide range of duties. They joined in the operations in the Bight of Heligoland on August 28th, 1914, harassing the enemy and doing invaluable reconnaissance work ; throughout the war, and as a matter of routine duty, they hunted down the enemy's mine-layers ; they escorted our own mine-layers ; they patrolled and protected our mine-fields in the North Sea ; they supplied in the winter of 1916–17 a division to assist the Dover Patrol in maintaining the Channel barrage ; they lent sections to the Dover Patrol for service off Ostend and Zeebrugge ; they kept up a continuous look-out along the Dutch Coast and the Frisian Islands for enemy ships which might seek to reach Belgian ports ; they escorted British merchantmen across the North Sea and, also, British sea-plane carriers when air-raids were made on the German mainland or islands ; they had patrols whose special duty it was to watch for enemy aircraft crossing the North Sea to make raids on England ; they captured enemy trawlers fishing in German waters, and they played the part of decoys by tempting the enemy's warships to pursue them where British submarines, lying below the surface, would blow them up and so achieve further successes in the way of keeping the North Sea open for British vessels.

The Harwich Submarine Flotilla had, prior to August 4th, 1914, been increased from the nine submarines of which it was originally constituted to an average of eighteen, and it was then the only organised flotilla of the kind in this country. The initial duty it was called upon to perform in connection with the war was that of watching the German coast lest any enemy vessel might venture out with a view to interfering with the dispatch of the First Expeditionary Force from Southampton to France. This responsible task fulfilled, the submarines settled down to reconnaissance work ; to patrolling our mine-fields on the east side of the North Sea and sending home wireless messages concerning movements

of the enemy's ships or otherwise ; to the laying of mines in connection with the said mine-fields, and to watching for and attacking enemy submarines, many successes being attained by them in this direction.

Harwich also became one of the most important of the bases established around the coasts of the British Isles for the Mine-sweeping Force which, composed of hired or commandeered paddle-steamers, trawlers, drifters and motor-launches, was engaged in the task of patrolling daily, for the duration of the war, some 2,000 square miles of sea in order to sweep up and destroy enemy mines. The work done from Harwich consisted in keeping clear certain channels either along the coast or extending across the North Sea ; and not until the daily sweeping had been accomplished were merchantmen and other vessels—including the Great Eastern steamers engaged on the Holland service—allowed to leave port. Such work was the more arduous and exacting inasmuch as the enemy, who was keenly bent on stopping our communications with the Continent, did his utmost to block effectively the routes from and to the Harwich area. The number of mines he laid there is declared to have been extraordinarily great, and he showed the utmost pertinacity in putting down fresh mines to take the place of those that were constantly being swept up. Channels which had been thoroughly cleared one day were never safe the next day until they had been swept clear over again ; and there was probably no point around our coasts where this precaution was more essential than at Harwich. So far was this the case that out of the 3,400 mines destroyed in home waters during the year 1917, over 1,000 were claimed to have been accounted for by the indefatigable Harwich branch of the British Mine-sweeping Force.[1]

In the accomplishment of this wide range of duties, the quay which had been provided at Parkeston through the enterprise of the Great Eastern Railway Company became a most valuable asset to the Admiralty and one of inestimable value to the country in the prosecution of the war.

Apart from the excellence and the amplitude of the shipping and transport facilities already spoken of, very little was required to convert the buildings on or adjoining the quay into a complete shore establishment offering great advantages to every one concerned. Thus in the early days of the war it was upon their depôt ship, stationed alongside Parkeston Quay, that the submarine crews, on returning to port and leaving the confined quarters in which they discharged their strenuous duties at sea, spent the interval granted to them for rest and relaxation between one exhausting voyage and another. There came a time, however, when the number of men to be provided for led to the accommodation on board the depôt ship becoming inadequate, and it was arranged that thenceforward they should spend their rest periods on shore. This was done by placing at their disposal the Great Eastern Railway Company's East Shed and Middle Shed, situate immediately alongside the quay. In these sheds, each about 400 ft. by 60 ft., they could sling their hammocks

[1] See " The Harwich Naval Forces : Their Part in the Great War," by E. F. Knight (London : Hodder and Stoughton, 1919).

at night and spend their leisure hours during the day. In the East Shed a stage or concert platform was provided. The West Shed was reserved for men belonging to the flotillas of destroyers.

The offices used in peace times by the company's staff and the Customs representatives were now utilised for billiard and recreation rooms for officers and men of the Harwich Forces. In the station buildings the Naval Paymaster was located. The stables were converted into a School of Wireless Telegraphy, and a site was found for some workshops and an experimental tank wanted by the Board of Invention and Research, which was understood to be making researches at Harwich into such matters as the best means of detecting the approach of enemy submarines. A torpedo depôt was arranged ; stores were available for naval supplies in general ; there were canteens for the various Forces ; provision was made for the holding of religious services ; parties of actors and artistes from the London theatres and music-halls paid visits to Parkeston to give performances and entertainments to the men as a relief to the trials of their life on the ocean, and the Great Eastern Railway Musical Society gave a number of concerts. The Railway Hotel at Parkeston, still conducted by the company, was a great boon to officers, their families and friends, for whom the accommodation it afforded was specially reserved.

Reference has still to be made to the company's Marine Repair Shops. These rendered most valuable service to the naval authorities, the more so as they afforded practically the only efficient means by which repairs to ships could be carried out in the Port of Harwich. The need for them was all the greater by reason of the large number of instances in which vessels forming part of one or other of the various Forces stationed in the port suffered from the mines that the enemy planted so thickly in the approaches thereto and in other parts of the North Sea.

In, perhaps, the majority of cases, the vessels which came in contact with mines were not sunk, but managed to get back to Harwich ; or, if the damage done to them could not be made good there, they might proceed to Chatham. Harwich was generally equal to the occasion, and the amount of repairing and refitting done there by the Great Eastern Railway Company's workmen was enormous. It was a matter of vital importance, also, that this work should be done with the utmost dispatch in order that the vessels concerned could be taken out to sea again with the least possible delay. To this end, the repair shops were kept open not only on weekdays but every Sunday and all holidays. So effective, too, was the work done that some of the vessels in question were mined, repaired and made serviceable again several times over. On the signing of the Armistice the demands upon the shops naturally fell off ; but a considerable volume of work still continued to be done for the naval and transport authorities. Taking the full period over which the shops were utilised for Admiralty purposes, the number of vessels of all classes either repaired or refitted showed an average of about 170 per year.

As an example of the pressure under which things had sometimes to be done, reference might be made to the case of Destroyer " S."

Late one Sunday afternoon in January, 1915, the Senior Naval Officer in charge of the Destroyer Flotilla signalled to the marine shops that repairs were wanted for a vessel which, as inquiry showed, had sustained serious damage to her port-bow plating, and, for the time being, had been rendered unseaworthy. The efficiency attributed to the Harwich flotillas was due in a material degree to their reputation for being always ready to proceed to sea when required ; and it so happened that, at the moment when the machine shops got their message, a " certain liveliness " was expected to arise in the North Sea at any moment. The remainder of the flotilla were standing-by under one hour's notice, and it was regarded as imperative that not a minute should be lost in making the damaged ship fit to go to sea again.

A consultation was held with the responsible naval officers as to the nature and extent of the temporary repairs which would suffice for the purpose ; messages were sent to the workmen then at their homes summoning them to the shops ; stages were rigged over the bows of the vessel, and at about 10 p.m. the work of cutting away the damaged plates and frames was begun. Boilermakers and bluejackets laboured together with the greatest ardour, and the work went on uninterruptedly until the early hours of the morning. Then the wind, which had been blowing with much strength throughout the night, increased to hurricane force, and it was no longer possible to keep the oxygen burners alight. With great difficulty a tarpaulin was rigged, the lights were adequately sheltered, and the work was proceeded with, a fresh squad of men being put on to relieve the others for a time.

Meanwhile, there was much anxiety on the part of those responsible, no one knowing how soon the recall might not be sounded by the sirens of the parent ships. The signal came at 1.30 p.m., just over sixteen hours from the time when the job was started. The work had not then been finished ; but the repairs done would, it was considered, suffice for immediate requirements. As soon as steam was up the Commander, rather than wait for the heaving of the staging, gave the order to " cut everything away." Before the workmen still on board could realise what was happening, they found the vessel steaming down the harbour at a speed of, probably, twenty knots an hour, and on the way, for aught they knew to the contrary, to Heligoland or elsewhere. The Commander, however, whilst the destroyer was still in harbour, signalled to a patrol boat to come alongside and take the workmen off. This having been done, Destroyer " S " continued on her course and took up, in good time, her position in the line, fit and ready once more for anything that might happen.

From all this it should be seen that what has been said as to the value of the services rendered to the national cause by the Great Eastern Railway Company's establishment on the river Stour is in no way exaggerated. The creation there by the Admiralty of such an establishment, on the outbreak of war, had one not already existed, would have involved enormous expense and have occupied considerable time. No possible

attempt indeed made in this direction could have succeeded under the conditions of actual warfare and within a sufficiently early period. As it was, the Admiralty found at Parkeston, on the very day that war broke out, practically all the facilities and all the accommodation they required for immediate use as an adjunct to their naval base at Harwich.

There certainly were a mumber of additional services in respect to electrical arrangements which had to be provided subsequently in order to meet the entirely new conditions ; but the supply of these was readily undertaken by the company and was most efficiently carried out by their Electrical Engineer. They included installation of electric lighting, heating, and power, together with supply of current, at the torpedo depôt ; installation of additional feeder cable and of lighting and power circuits, and supply of current, at the Invention and Research Depôt ; installation of electric lighting, power and heating, and supply of current in workshops, stores and other buildings ; provision of additional telephone facilities ; supply of current for submarines, destroyers, etc., when lying at the quay ; repairs to motors, armatures, telephones and various electrical machinery and plant ; provision of H.T. line and additional plant at power station for supply of current to shops, etc. ; installation of H.T. line and supply of current to Beacon Hill Fort and camps at Dovercourt, and installation of electric lighting, supply of current, and fitting up X-ray apparatus (presented by the Chairman and Directors of the Great Eastern Railway Company) for the Harwich Hotel, in use as a military hospital.

In this way the efficiency of the Great Eastern Railway Company's already well-organised establishment on the Stour was completed from the point of view of naval needs, and it is not too much to say that, but for Parkeston Quay, many of those operations in the North Sea which had so important a bearing on the whole course of the war could hardly have been carried out at all.

CHAPTER XLII.

NAVAL AMBULANCE TRAINS.

ORGANISATION for naval medical transport on land was practically non-existent in this country when war broke out in August, 1914. Plans had long been prepared for the conversion from ordinary railway rolling stock of such military ambulance trains as might be wanted in the event of operations having to be undertaken against an invader; but there were no plans ready for ambulance trains adapted to the special requirements of the Navy, which requirements differed in some of their most essential details from those of the Army.

The main reason for this apparent defect in national policy is to be found in the expectation that, in the event of operations at sea in which our Navy might be engaged, the wounded would be brought to Portsmouth, Plymouth or Chatham, and there transferred direct from ship to the great naval hospital with which each of these ports had been provided, no need thus arising for their conveyance elsewhere by ambulance train. When under these conditions the Grand Fleet reached Scapa Flow, the position was that there were no naval ambulance trains for bringing to the South the large number of wounded certain to be landed in Scotland or on the north-east coast of England if the great battle that might occur in the North Sea at any moment should actually be fought. Neither, too, had arrangements been made for giving immediate attention to wounded who might be landed—or whose gravely-damaged vessel, to save her from sinking in deep water, might be beached—at any available point along our coasts.

Hence in these respects, also, and apart from differences in ambulance-train construction, the requirements of the Navy differed from those of the Army, whose sick and wounded from the Fighting Forces at the various Fronts would be conveyed therefrom to some previously-determined port overseas, and thence brought on to a specified port on this side where ambulance trains for their transport to some inland hospital prepared to receive them would be in waiting.

No sooner had these facts been realised than there was brought into being by the Admiralty a Naval Medical Transport Service which was designed to take charge of the transport of naval sick and wounded from the time they left their ship until they arrived at the hospital to which they were to be sent on shore.

This Naval Medical Transport Service was originally planned in the

Nore Command by Surgeon-General, afterwards Surgeon-Vice-Admiral, Sir James Porter, K.C.B., R.N. Sir James was himself appointed Principal Medical Transport Officer, assisted by Surgeon-Lieutenant A. V. Elder, R.N.V.R. He was succeeded by Surgeon-Captain Charles S. Woodwright, and finally by Surgeon-Captain Sir Arthur Stanley Nance. In conjunction with the naval ambulance trains forming an essential part of the plan of operations, the Service, which worked with the greatest smoothness throughout, provided an elaborate and remarkable network of organised effort, and one that well deserves to rank among the most successful of British endeavours during the course of the war.

Organisation of the Ports.

The scheme adopted was based primarily on the division of the coasts of Great Britain into five areas. Scotland, with headquarters at Edinburgh, formed one of these areas, and the most important of them all. The others had their headquarters at Chatham, Portsmouth, Plymouth and Hull respectively. At each of these five centres a naval medical officer of high rank was stationed as Medical Transport Officer. He was placed in charge of the area assigned to him and was responsible to the Principal Medical Transport Officer, who, in the first instance, was located at Chatham, though subsequently the Central Office of the Service was removed to the Medical Department of the Admiralty in London. Each Medical Transport Officer had under his direction an Assistant Medical Transport Officer in every port within his area at which there was any likelihood of sick, injured or wounded being landed from the Fleet. The Assistant Medical Transport Officer was generally a local practitioner, and among the duties assigned to him was that of forming local parties of naval stretcher-bearers whom he instructed in first-aid and in the handling of naval cots, the latter being a procedure essentially different from ordinary stretcher drill. In every port, also, to which an Assistant Medical Transport Officer was assigned, provision was made for the setting up either of a Medical Depôt or of an Emergency Medical Depôt for the reception and treatment of naval patients until they could be removed by ambulance train to a naval hospital proper.

Medical Depôts were established at the larger ports constituting obvious bases for the landing of wounded in the event of an action at sea. Here it was generally possible to make arrangements with local hospitals for dressing-stations and the use of a certain number of beds in case of need.

Emergency Medical Depôts were arranged at all intermediate ports which ambulance or rescue vessels might enter to discharge wounded conveyed by them or into which damaged vessels from the Fleet might be forced to run for their own safety. At these smaller ports hospital accommodation might not be available. Each Emergency Medical

Depôt was, accordingly, supplied with four "Units," known as "Cot," "Clothing," "Hospital" and "Medical" Units respectively. The Cot Unit consisted of completely-equipped service cots which could be used to form the nucleus of a temporary hospital in suitable local buildings selected in advance for this purpose. The Hospital and Medical Units, containing all the necessary utensils, drugs, dressings, etc., were kept available for immediate use in these extemporised receiving stations. The Clothing Unit was designed for the benefit of men suffering from immersion. It ensured to them a supply of dry clothing so that, should they otherwise be in fit condition so to do, they could proceed at once on their journey.

The carrying out of these plans involved a great deal of uncertainty since it was not possible to know in advance which port or ports might not be suddenly called upon to deal with an inrush of wounded; but, in the result, no likely place around the coasts of Great Britain was left without the means of dealing with any such emergency. This fact can be more clearly established by the following list of ports at which either Medical or Emergency Medical Depôts were established under the conditions stated :— Thurso, Wick, Invergordon, Inverness, Lossiemouth, Buckie, Banff, Fraserburgh, Peterhead, Aberdeen, Stonehaven, Montrose, Arbroath, Dundee, Methil, Kirkcaldy, Port Edgar, Leith, North Berwick, Blyth, North Shields, South Shields, Middlesbrough, Whitby, Scarborough, Bridlington, Hull, Immingham, Yarmouth, Lowestoft, Harwich, Brightlingsea, Chatham, Dover, Portsmouth, Plymouth, Avonmouth, Liverpool and Glasgow. All these different ports, with the exception of Liverpool and Avonmouth, were included in one or other of the five areas in charge of Medical Transport Officers. The Assistant M.T.O.'s at Liverpool and Avonmouth received their instructions direct from London.

Hospital Ships.

According to Fleet-Surgeon E. C. Lomas, C.B., D.S.O., M.B., R.N., as told by him in an article on "Hospital Ships" published in the *British Medical Journal* for April 28th, 1917, there was, before the war, only one British hospital ship in commission, namely, *The Maine*, and this went ashore in a thick fog on June 19th, 1914; but the arrangements previously made by the Admiralty for the provision of hospital ships "worked admirably." Within four days, he says, of the order to mobilise for war, three ocean liners were converted into hospital "carriers" and, "with their medical and nursing staff and full equipment of cots, bedding, and medical and surgical stores complete, which had been kept ready in a 'lay-apart' store in one of the large medical depôts, were already at sea. Any necessary alterations were completed by the artisan ratings, so that they joined up with the Fleet ready for any emergency." Meanwhile, work in accordance with plans which had

been prepared in peace was being pressed forward on six other ships intended for more permanent service. These other vessels were mostly intermediate liners on which the passenger accommodation and the cargo space could be readily adapted to the desired purposes, and all six were ready for sea in about three weeks.

To these details it may be added that the principal decks of the hospital ships, which, as will have been seen, were designed to follow the Fleet into action, were converted into surgical and medical wards. They were each provided with an operating theatre and a bacteriological laboratory, while, in addition to the usual surgeons, they carried specialists in surgery and bacteriology, with the addition, in most instances, of an oculist and a dentist. Four hospital sisters were included in the staff, the remainder of which consisted of ratings of the naval medical service. Each ship was manned by a mercantile captain and crew.

Before long, however, it was found that the proposal to let the hospital ships follow the Fleet into action would, for various reasons (including the disposition shown by the Germans to sink such vessels whenever they could), have to be abandoned. It was then decided that they should remain in deep-water ports where fighting ships could safely transfer wounded to them on returning to their base for coaling, for the purpose of being re-munitioned, or for other reasons.

Experience was now further to show, however, that a hospital ship, with its limited amount of space, could not be regarded in the light of a base hospital suitable for any prolonged treatment of naval wounded. With the best possible system of ventilation, there was a tendency for the air in the cabins or saloons to become fetid, and especially so when, after an engagement, congestion or overcrowding might arise owing to the retention for what, in all the circumstances and conditions, would be an unduly long period of the wounded brought in. So the hospital ship in port eventually became the equivalent of a casualty-clearing-station on land, its aim and purpose being to give the patients such immediate attention as they might require and then ensure their removal ashore at the earliest possible moment.[1] For these reasons, also, still greater importance attached both to the provision of a sufficiency of base hospitals at the points where the patients would be landed and to the efficient working of a naval ambulance train service.

Auxiliary Naval Hospitals.

Another and no less important part of the general scheme was the securing in Scotland of such a degree of accommodation for naval sick, injured or wounded landed there that no necessity would arise for bringing the whole of them to the established naval hospitals in the South. Various measures were taken towards the attainment of this aim.

[1] See "A Note on Hospital Ships and their Functions," by Acting-Staff-Surgeon A. Vavasour Elder, R.N.V.R., *Journal of the Royal Naval Medical Service*. October, 1916.

There was already at Queensferry a naval hospital with 159 beds, and later on this accommodation was increased to 259 beds by the provision of additional wards.

At Invergordon a Naval Officers' Club which was on the point of completion when the war broke out was converted to the purposes of a naval hospital for officers and men brought to Cromarty Firth. Located close to the railway station, it was in a most convenient situation for the removal of patients to the ambulance trains. It did not, however, accommodate more than fifty beds. Later on a start was made with the erection of a new hospital which was to provide for 250 beds; but this building had not been finished when the war ended, and it was to the Officers' Club that all the patients landed at Invergordon who were not put direct on to the ambulance trains were first taken.

Then arrangements for the reception of naval cases were made with certain civilian hospitals in Scotland, including the Northern Infirmary, Inverness, the Royal Infirmary, Aberdeen, and the Edinburgh Royal Infirmary, while the Edinburgh City Infectious Hospital agreed to take infectious cases landed from the Fleet. A Lunatic Asylum at Larbert (1,200 beds) and the East Pilton Infectious Hospital at Granton (at first 220, eventually 400, beds) were used as general naval hospitals.

Various convalescent hospitals were also arranged for in Scotland. In the late autumn of 1917 the Admiralty, exercising the powers conferred on them under the Defence of the Realm Act, took over the extensive hydropathic establishment at Peebles as a convalescent hospital for officers. Dungavel House, Strathaven, Lanarkshire, belonging to the Duke of Hamilton, was fitted up as a convalescent hospital by the Church Army. From Wemyss Bay officers and men embarked for Rothesay, Isle of Bute, where the Marquis of Bute's residence had been adapted to the purposes of a naval convalescent hospital.

In addition to what was thus done in Scotland for the British Naval Forces, special hospital accommodation was provided there for the U.S.A. Navy co-operating with our own. For them the Pavilion, the Baths and two of the largest hotels at Strathpeffer were taken over. At Leith the Americans had the use of the Poorhouse and Poorhouse Infirmary for general hospital purposes; though British as well as American Naval Officers and men were admitted without distinction to both institutions. The Americans also dealt, at Strathpeffer, with the whole of the British infectious cases occurring in the North of Scotland.

The measures thus taken in Scotland were supplemented by the securing of additional accommodation in the South. In London the Homœopathic Hospital reserved a certain number of beds for naval cases. Naval officers were received into various military and civil hospitals in the Metropolis. The Seamen's Hospital at Greenwich was made available for naval ratings, and a large hotel at Southend was taken over and converted into a convalescent hospital for still more naval ratings. In the West of England a naval convalescent hospital was opened at Truro in a workhouse fitted up for the purpose by the Cornwall Branch

of the British Red Cross Society. A number of other hospitals, existing or extemporised, were also made use of.

Standard Naval Ambulance Trains.

On August 6th, 1914, when the London and North Western Railway Company were already engaged, at their Wolverton Carriage Works, on the construction of three ambulance trains for the War Office, a request was made to them that they would, with the utmost possible speed, supply the Admiralty with an ambulance train specially adapted to the needs of the Navy. Telegraphed instructions to this effect were sent from Euston to Wolverton; the vehicles necessary for conversion into ambulance coaches were collected and taken to the workshops; a staff of men was set on to make the needful alterations; the work was persevered in continuously, night and day, for thirty hours, and at half-past four o'clock in the morning of August 8th, the complete train was dispatched to Chatham Dockyard.

With what satisfaction the results were regarded was shown by a letter, dated August 9th, 1914, received by Mr. H. D. Earl, Carriage Superintendent at Wolverton, from Surgeon-General Sir James Porter, who wrote:—

> Royal Naval Corridor Ambulance Train from Wolverton has arrived to-day, and has gladdened me very much. It is so satisfactory that I am asking the Admiralty for a second of a similar construction. I consider great praise is due for the manner the department under you has carried out this work.

No. 1 Naval Ambulance Train, as it was called, made its first run with patients on September 17th, 1914. Orders for four more ambulance trains on Admiralty account were subsequently sent to the North Western, and these, in turn, started to run as follows: No. 2, June 22nd, 1915; No. 3, June 2nd, 1916; No. 4, June 9th, 1916, and No. 5, March 21st, 1918. Apart from certain trains of an "emergency" type, to which reference will be made later, these five constituted the fleet of ambulance trains working for the Admiralty throughout the war; and their construction was entrusted to the London and North Western Railway Company, not only because of the satisfaction that the first of the series had given, but, also, because that company had an exceptionally good supply of the open parcel-vans which were specially suited to naval ambulance train purposes.

The trains numbered 2, 3, and 5 respectively were of a full-length "standard" type to which No. 1, originally put together on somewhat different lines, was afterwards adapted except in some minor details. Each train consisted of twelve coaches, as follows: (1) Guard's van, and space for the slinging of 16 hammocks for members of the crew. (2 and 3) Ward cars, each with 24 cots for men. (4) Day coach. (5) Men's kitchen, stores and office. (6, 7 and 8) Ward cars for men, accommodating 24, 20 and 24 cots respectively. (9) Officers' ward car, with

20 cots. (10) Officers' dining coach and officers' kitchen. (11) Medical staff coach. (12) Baggage and guard.

No. 4 train, designed for service in Scotland, comprised seven coaches only, in order that the steep gradients of the Highland Railway could be surmounted without the need to employ a second locomotive. In this instance the train was made up thus: (1) Guard and crew. (2) Ward car for men, accommodating 36 in cots or seated. (3) Ward car for men, 24 cots. (4) Day coach. (5) Kitchen and stores. (6) Officers' ward car, accommodating 16 cot and four sitting cases. (7) Baggage, guard and staff.

The chief difference between a military ambulance train and a naval ambulance train is in the fitting up of the ward cars. In the former the cots are a fixture to the sides of the cars. Patients are brought into the train on army stretchers and are moved therefrom on to the mattress of what is, in effect, an iron-framed steel-spring folding bedstead. In serious cases the stretcher itself is placed on the cot fittings. The patient is not then disturbed, though by remaining on the stretcher throughout the journey he loses the benefit of the spring mattress. In the ward cars of naval ambulance trains the cots are movable, being suspended from hooks fixed in the roof of the vehicle.

A naval standard cot is alike a bed and a stretcher. The patient —if a cot case—is placed in it on board his ship. He may lie in it on deck awaiting the steamship or the boat in which he is to be taken ashore. He and his cot will be slung together from the one vessel to the other at sea. Still in his cot, he will, on arrival at the port, be moved either to the hospital ship stationed there or to a naval hospital on land. In the same way he will be carried on the naval ambulance train and will remain in his cot throughout the journey. At the end thereof he is taken from the train to the ambulance that will convey him to the hospital to which he has been designated, and he does not leave his cot—which by this time may seem to have become almost part of himself —until he is alongside the bed he is to occupy.

Naval medical experts are strong in their preference for this arrangement over the "fixed cot" system of the military ambulance trains—the more so as they consider that in cases of severe injury the repeated transfer from bed to stretcher, from stretcher to cot and from cot to stretcher must often be a painful procedure for the patient, if not sometimes actually prejudicial to him. On the other hand there is the consideration that the movable cot may be better adapted to naval than to military conditions.

In the idea of the movable cot itself there is, of course, nothing new. The type in use to-day goes back to the time of Nelson; and, if it should have escaped the "modern improvements" which attend most human inventions, that is because, by reason of its simplicity and effectiveness, it is considered beyond the scope of improvement.

Canvas is stretched over a flat wooden frame in such a way that each of the two end pieces forms a triangle. In the apex of each triangle there is placed an "eye" for the rope—or, in nautical language, the

lanyard—to be used when the cot is suspended from the hooks to which it will be attached. The canvas at the sides is extended to such a length that, when the patient is lying on the cot, with the hair mattress, pillow and two blankets (sometimes supplemented by a third), which form part of the standard-cot equipment, the two sides can be brought over him and attached the one to the other by safety-pins. He thus gets the equivalent of a fixed counterpane which will not only itself contribute to his warmth but make it impossible for the blankets to slip off. These two sides can, also, be laced to the canvas ends, so that eventually the patient is in a sort of enclosed-box bed in which he should be impervious to draughts or chills no matter under what conditions he may be moved, in the open or otherwise. Naval sick or wounded were, in the later stages of the war, even taken in their cots on sledges over the snows of Northern Russia under these conditions.

The dimensions, over all, of the standard naval cot are: Length, 5 ft. 10 in., breadth, 2 ft. 4 in. The "loaded" cot can be moved by four bearers, either by hand—one holding up at each corner—or by raising it on to their shoulders. Inside the ambulance train two more bearers are wanted to fix the cot to the hooks in the roof.

Each ward car of a naval ambulance train can, as a rule, accommodate twenty-four cots slung, twelve on each side, in two tiers, upper and lower. Those in the upper tier are attached direct to the hooks by means of the "eye" in each of the triangular ends. Those in the lower tier are suspended below the upper ones by the aforesaid ropes, hanging from the same hooks. To the sides of the car there is fixed a series of padded buffers against which the cots are pressed by means of an adjustable spring-clip devised by Staff-Surgeon Elder. It is claimed that, as the combined result of these arrangements, the patient in the movable cot of the naval ambulance train does not form a component part of the vehicle—as in the case of the patient in the fixed bunk of the military ambulance trains—the vertical jarring, as the train passes over the metals, being largely neutralised by the suspension, while the lateral jarring, when the train is going round curves, etc., is absorbed by the padded buffers.[1]

Whenever one of the ward cars was occupied by patients who did not require to remain in their cots throughout the day on a long journey from North to South, sitting accommodation was arranged for them by stacking two rows of cots along one side of the coach, placing thereon, in a slanting position, another row which rested against the sides of the coach to form a back, and covering over with a washable canvas the continuous seat thus formed. As only one side of the coach was utilised in this way, the men could lean back and stretch out their legs without interfering with the passing of other patients or of the staff,

[1] See "Notes on Naval Ambulance Trains and Description of Naval Ambulance Train No. 1," by Staff-Surgeon A. Vavasour Elder, R.N.V.R., *Journal of the Royal Naval Medical Service*, January, 1915; and "Account of Land Medical Transport Arrangements of the Navy," by Surgeon-General Sir James Porter, K.C.B., K.C.M.G., M.D., R.N., and Staff-Surgeon A. Vavasour Elder, R.N.V.R., *British Medical Journal*, April 28, 1917.

to and fro. In the evening the cots were readily suspended from the hooks again and the coach re-converted into a sleeping-compartment.

On No. 4 train the smaller number of coaches made it especially necessary that the available space should be used to the best advantage, and, as indicated above, one of the ward cars for the men accommodated 36 cots. This result was obtained by substituting for hooks in the roof three tiers of folding-up beds, along the sides, on which the cots could rest. While, therefore, the movable cot was retained there was, in this instance, and with a special purpose in view, a certain concession to the fixed-fittings principle adopted in the military ambulance trains, the advantage being gained that twelve more patients could be carried than if all the cots were suspended from the roof in accordance with the usual naval practice.

The number of passengers was generally determined by the number of cots which could be brought into use. On the four full-sized trains, sitting-patients going from Scotland to the South of England would require cots to sleep in at night even if, as invalids, they should not wish to rest in them some time during the day. Sitting-patients in excess of the number of cots could, therefore, be taken for short distances only. In Scotland the conditions were somewhat different; yet even there it was customary for patients to join, in the evening, at Invergordon, an ambulance train not due to reach Edinburgh until the next morning.

Arrangements were made for a continuous supply of the cots so that there would be no risk of a shortage occurring at any point on the line of communication. Not only was a large stock got together in the first instance, but all the principal naval bases undertook the cleansing and disinfecting of the cots and their equipment before they were used a second time. Then, when an ambulance train started on its outward journey, it carried a store of clean, empty and fully-equipped standard cots which, in exchange for the "loaded" cots, were to be returned to the ship forwarding the patients taken on the train. In this way the fighting-ships always had their full complement of clean cots. Similarly the ambulance trains received a clean cot at destination for every "loaded" one taken from them for conveyance to a hospital.

Another respect in which the naval ambulance train differed from the military ambulance train was in the provision on the former of what was known as the "day coach."

The day coach, converted from a parcels van similar to those used for the ward cars, answered a variety of purposes. Fixed against each side were tables at which the sitting-cases could have their food or otherwise spend their time, collapsible forms being provided for seats. Twenty-eight patients could be served at one time with meals. These were brought into the coach from the kitchen in specially-designed wooden boxes in which six plates, one above the other, could be carried. On the flaps of the tables being raised, washing-basins, with water supply, were found underneath. At one end of the coach were two padded rooms for violent or noisy cases.

WARD CAR OF NAVAL AMBULANCE TRAIN.
(Showing how the Movable Cots were suspended from Roof.)

WARD CAR ARRANGED FOR SITTING CASES.

[To face p. 570.

THE "DAY COACH" OF A NAVAL AMBULANCE TRAIN.
(Converted from a London and North Western Railway Company's Parcels Van).

To face p. 571.

In the same coach, also, there was a "dressing-station" fitted with table, locker, sink, etc., and supplied with instruments and drugs. This took the place of the treatment room on the military ambulance trains. In the opinion of the naval medical authorities concerned, an ambulance train is not a suitable place for the carrying out of operations. They hold that any patient likely to require an operation during the journey should not be put on the train at all, and that if, alternatively, the need for an operation should arise unexpectedly *en route*, it is much better to stop the train at the nearest available station, lift out the patient in his cot, and so convey him at once to a hospital. There was, they considered, the greater reason for the adoption of this course since the carrying out of any operation in the course of the journey would involve delay, shunting on to a siding, temporary stoppage of traffic, or some other inconvenience which it was desirable to avoid. The loading-up of the naval ambulance train was, as far as possible, arranged accordingly; though, with a view to making provision for every possible emergency, a treatment couch, or table, 1 ft. 9 in. × 6 ft., on four strong folding legs, was slung in the roof of the day coach in order that it might be available if absolutely necessary. This, however, was mainly a precautionary measure. As a rule the dressing-station was used for no more than dressings, and then only when the train was in a station or otherwise at rest.

The day coach was the centre of social life for those of the patients who could move about, and on a long journey it became the equivalent of a much-appreciated living-room.

In the officers' dining-coach there was sitting-up accommodation for ten. Sleeping accommodation for eight could, if necessary, be arranged by means of cots specially made to fit across the seats of the saloon, canvas curtains being stretched along both sides of the central gangway to ensure privacy.

The guard's van at the end of the train was nominally used for patients' baggage and effects; but, if not wanted for this purpose, and if more space should be wanted for an unusually heavy load of patients, 24 extra sitting-down cases could be accommodated here on short journeys by means of folding seats. The same could be done in the other guard's van, at the front of the train. This course was especially adopted when extra provision had to be made for sitting cases going short journeys.

The ordinary staff of a standard naval ambulance train consisted of two medical officers and—including cooks, clerks and male nurses—36 men belonging to the Royal Naval Auxiliary Sick Berth Reserve. Accommodation was also provided for two nursing sisters; but these did not join the train unless there was some special need for their services. Otherwise the staff lived continuously in the train, on which regular sea-watches were kept, night and day. Each train was, in fact, commissioned like a warship and was equally self-contained and self-supporting. There was even a port and a starboard side of the train, letters

and figures being coloured accordingly. Externally the train, also, was painted navy grey.

When the trains were running, they were heated by steam conveyed from the engine in pipes suspended from the roofs of the cars, obstruction of the floor space thus being avoided. When the engine was not attached, the heating—in the interests of the staff living on the train—was arranged for by a self-contained high-pressure heating apparatus in the dining and staff cars, whilst at certain depôts steam could be supplied from an ordinary stationary boiler, this being connected by a hosepipe to the steam-pipe of the train.

Electric fans helped to keep the coaches cool in hot weather. Electric light was provided by means of dynamos when running and by accumulators when at rest. Cooking was done by gas, carried under each kitchen car and one adjoining car. There was telephonic communication between most of the cars; a portable signalling arrangement allowed of direct instructions being given to the driver in regard to such matters as speed and heating; an ample water supply was carried and baths were available.

The phrase "Hospital on Wheels," as applied to what is really no more than an *ambulance* of the best type adapted to transport by rail, is, of course, a misnomer, the more so as no "hospital" is a hospital if operations cannot be performed in it. Yet the Naval Ambulance Train, with all its comforts, if not with all its actually luxurious arrangements, was at least the further equivalent of an hotel or a temporary home on wheels; and the marvel is that the naval medical authorities and the railway experts, in combination, were able to provide for so wide a range of purposes out of little more than a collection of passenger coaches and parcels vans, the transformation thereof being effected with a degree of ingenuity and success which reflected infinite credit upon all concerned.

Emergency Ambulance Trains.

In addition to the standard naval ambulance trains provided by the London and North Western Railway Company to the order of the Admiralty, there were several other trains, of an "emergency" type, which, put together in the early days of the war, also came into consideration, more or less, from a naval point of view.

The South Eastern and Chatham Railway Company were asked on August 1st, 1914, to provide two ambulance trains which were wanted for the conveyance of naval patients to or from the naval hospital at Chatham. The company undertook to supply both trains within 48 hours. The stock required for making them up was at once withdrawn from traffic and sent to the company's carriage works at Ashford for the carrying out of the necessary alterations, the two trains being in readiness by the time specified. Each consisted of eleven vehicles. Nine of these were bogie brake carriages composed of passenger compartments with

a brake and luggage compartment at one end. The former were retained and used for sitting cases, and the latter was fitted with brackets for cots. The two other vehicles were brake vans in which stores and medical appliances were to be carried. The trains made several trips to meet naval requirements. When not in use they were "stabled" within the Chatham area. Though found useful, however, for short journeys, they were not adapted for long ones owing to the fact that the vehicles did not communicate with one another, while the absence of a kitchen would have made it necessary to stop the trains whenever the patients required to be fed. Even as regarded short journeys there was no probability that they would be much wanted for the Chatham district, and, in the circumstances, one train was released in September, 1914, and the other in December of the same year.

Another emergency ambulance train—and one, in this instance, of a very primitive kind indeed—was ordered from the Great North of Scotland Railway Company on August 6th, 1914, by a military officer and a medical officer who wanted to have the train prepared as soon as possible, and themselves gave instructions as to how this should be done. Some ordinary third-class non-corridor carriages were drawn from stock at Inverurie; they were made up into a train for Inverness, and eight joiners from the company's Locomotive Works were put into the carriages to convert them into an ambulance train *en route*. The joiners followed the instructions given to them, and they completed their task within a very short time of the train arriving at its destination. But the ideas of the two officers in question as to what would suffice even for an emergency ambulance train were of the most elementary type since nothing was done to the carriages beyond cutting in each of the divisions a hole about three feet by two feet as a means of "communication" between one compartment and another. This meant that the cots or stretchers on which the wounded lay would be placed one along each seat, and that doctors and nurses wanting to pass from one compartment to another would do so by climbing over the patients and making their way through the aforesaid holes. The train could not, in fact, be used for cot cases either by the military authorities or by the naval authorities, who, in the event of an early battle in the North Sea, might otherwise have found it of great service. This, however, was obviously not the case, and the train was reconverted into passenger coaches in 1915.

As against this unsuccessful experiment, the North British Railway Company rendered much good service by means of an emergency ambulance train which they got together, also under conditions of great urgency, at about the same time. It was ordered from them by the Scottish Command on the evening of August 6th, 1914, and it was ready for use within twenty-four hours. It consisted of eight vehicles, namely, four parcels vans, converted into ward cars and fitted with suspended cots; two brake thirds, for sitting-patients, a composite coach of firsts and thirds for medical officer and staff, and a dining-car. Accommodation was provided for ninety-six cot cases in the train. It was vestibuled

throughout, so that one could walk from one end to the other. The Chairman of the company, Mr. Whitelaw, took an active part in the formation of the train and continued to interest himself in it during the whole period of the war. From a military point of view, however, the train was not regarded with much favour because of the suspended-cot arrangement, while, although this disadvantage might have been overcome by alterations, the train was, for technical reasons, not suitable for journeys to and from Dover. So, in October, 1915, the military authorities proposed to dismantle it; but Surgeon-Captain Sir Arthur Stanley Nance, then Naval Medical Transport Officer for Scotland, put in a plea that the train should be retained as a naval ambulance train, the ward-car arrangements being especially adapted thereto, and this proposal was concurred in.

Ambulance Train Services.

The regular service of naval ambulance trains was arranged on a two-fold basis—a Scottish service and a service between Scotland and England.

The former was rendered by Naval Ambulance Train No. 4, which was stationed for a period of two and a half years at Inverness. From thence it made regular trips to Invergordon, in order to collect patients landed there and take them on to Edinburgh either as the starting point for destinations in the South or as a distributing centre for Scottish convalescent hospitals. Occasional trips were also made as far north as Thurso, though in regard to this port there was no fixed schedule.

The service between Scotland and England was worked by the four full-length naval ambulance trains. These were "stabled," two at Edinburgh, one at Glasgow and one at Chatham. There was, in the first place, a fixed weekly tour which began at Edinburgh and ended at Chatham. All Medical Transport Officers and Assistant Medical Transport Officers who had on hand at their respective ports cases to be brought to hospitals in the South sent messages to headquarters in London giving the number of patients and classifying them into officers and men and cot cases or sitting-cases respectively. The headquarters staff collated these messages and sent instructions to Edinburgh as to the ports at which the regular weekly ambulance train was to call and the total number of patients in the four categories for whom arrangements in the way of supplies, etc., should be made. From Edinburgh the train would travel along the East Coast, calling at all ports specified on the pre-arranged list, and proceed thence to Plymouth, Gosport (Portsmouth Harbour) and Chatham, in the order here stated. Patients from Edinburgh to Chatham were thus taken first to Plymouth. This was certainly a roundabout journey for them, but the trip was based on the idea that all officers and men, either joining at Edinburgh or picked up at any place *en route*, should be taken to their home port in order to be as near to their friends as possible.

Leaving Edinburgh on Wednesday morning, the train arrived at

Chatham on Thursday evening, the round journey being generally accomplished in about thirty-four hours; and, inasmuch as the patients had comfortable cots, were fed each according to his prescribed dietary, and were well cared for generally, it is not likely that even those from Edinburgh for Chatham found the journey especially trying.

This programme was subject to certain alterations. The round tour might, for instance, be started at Invergordon instead of at Edinburgh if any considerable number of patients should have been landed at the former port, a standard train (with an additional engine for the heavy gradients) then taking the place, as between Invergordon and Edinburgh, of No. 4 train; while every fortnight the ambulance train arriving at Plymouth took patients on from the naval hospital there to the convalescent hospital at Truro, the arrival at Chatham being, in this case, delayed until Friday morning.

Under the arrangements made, one of the four standard naval trains was always at Chatham, ready for any emergency that might arise in the South. This meant, in practice, that the train which got there on Thursday night or Friday morning remained until the next regular train came, the following week, when the train in waiting would start on its own return journey to Edinburgh.

Good work was done, again, on this return journey. From Chatham the train took to Greenwich, London and Southend whatever men were in fit condition for removal to convalescent or other hospitals there. A certain number of officers might also start from Chatham for the officers' convalescent hospital at Peebles. On leaving Southend, the train went to Willesden Junction and there picked up convalescent officers who had come from Plymouth or Portsmouth by ordinary trains and were also going to Peebles.

The train "stabled" at Glasgow made the journey to the South viâ Larbert and Edinburgh, taking patients on from Larbert as might be required.

In addition to this fixed weekly service, making the tour here described, there was generally a supplementary train once a week from Edinburgh to the South; though this particular train might go no farther than Plymouth and then return direct.

Allowing for all the various services in Scotland and England and the stationing of a train always at Chatham, there was only one of the five left as a "stand-by" in the event of some great emergency arising; while the needs of the U.S.A. Navy were provided for no less than those of our own. As it happened, also, the American seamen were still more affected by North Sea weather conditions than the British seamen, the former providing, in proportion, a greater number of cases of sickness for the hospitals on shore.

Much help was afforded, in these circumstances, by the ambulance train put together by the North British Railway Company, and declared by the naval medical authorities to have rendered good service to the Royal Navy on many occasions. This good service was done in respect

to journeys in Scotland itself, as, for instance, in the conveyance of patients from Port Edgar, on the Forth, to Wemyss Bay, on the West Coast, or from Larbert to Edinburgh, when No. 4 might be otherwise engaged. The total number of patients carried in the train down to the end of 1918 was about 600.

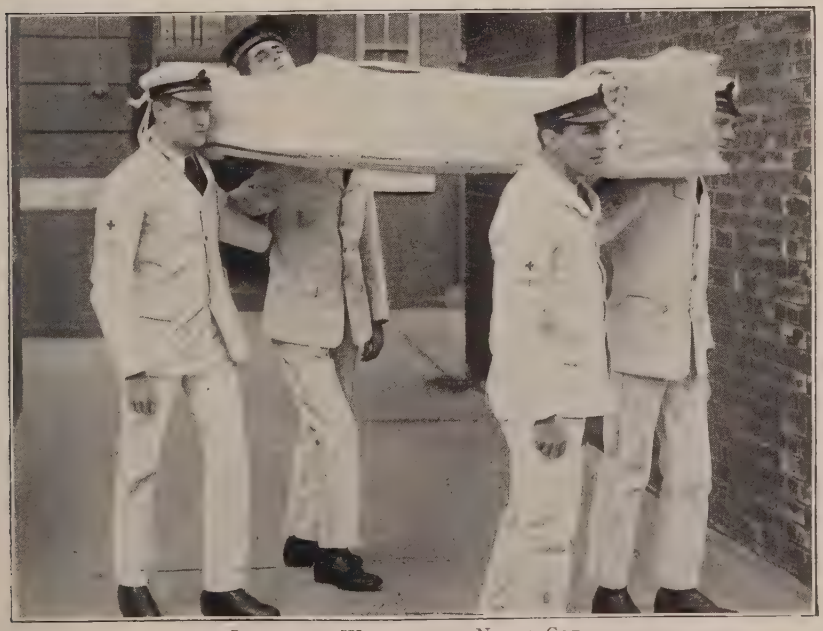
Naval ambulance trains worked by the Highland Railway Company from Invergordon under a fixed schedule arrangement averaged one per week for the years from 1915 to 1918 inclusive—a total of, approximately, 208. At stations on the North British Railway naval ambulance trains were dealt with as follows down to the end of 1918: Edinburgh, 230; Port Edgar, 260; Rosyth, 50; Leith Central, 210; Craigentinny, 110; Peebles, 140, and Larbert, 220. These figures give a total of 1,220; though this, of course, is not to be regarded as the actual number of trains run, since the same train might call at several of the different stations to set down or to pick up patients. Corresponding figures for the Caledonian Railway are—Edinburgh, 135; Perth, 174; Wemyss Bay, 80; Strathaven, 41; Larbert, 97; Dawsholm, 98; and Peebles, 5.

From Ship to Hospital.

In the arrangements for the collection of wounded troops on the battlefield and their conveyance to Britain there was comparatively little variation. A definite course of procedure was arranged, and this was generally followed as a matter of routine, the various stages in the journey home and the conditions under which they were made being mainly "according to plan."

In the removal of sick and wounded from battleship to home hospital the variations in the methods adopted were almost endless. Definite plans and programmes were impracticable. The conditions to be met were almost as changeable as the waves of the ocean itself. Nothing could really be standardised, nor, in attempting to give an idea of what was done, is it possible to generalise. That which was possible on one type of warship might be impossible on another. If, also, the fighting-ships differed greatly, so did the ambulance vessels, as they may be called, on which the patients from them were sent ashore. In either case there might have to be wide differences in the methods of handling. The procedure followed was thus based on the principle of ready adaptation of general plans to particular instances. Those concerned had to be prepared to deal with conditions as they found them, however much these might differ from what had occurred elsewhere or in other circumstances.

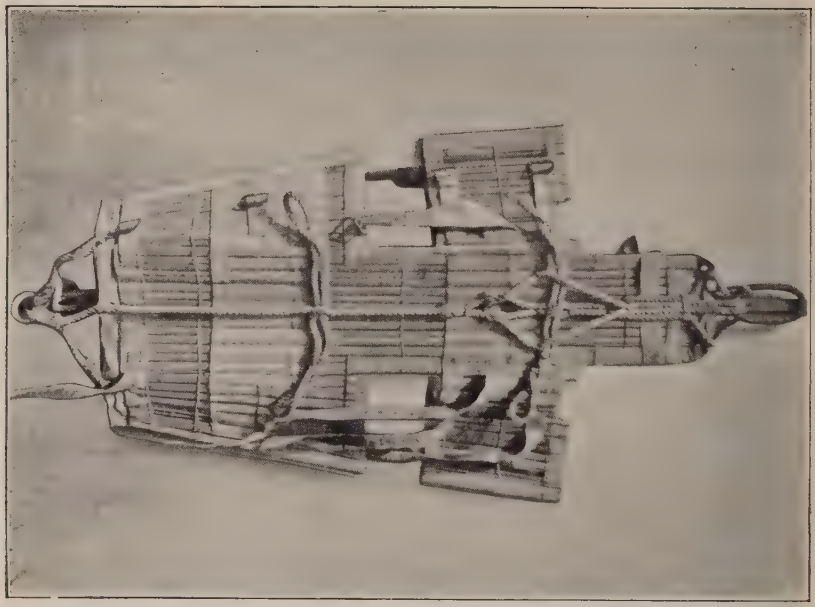
On the biggest battleships, for example, there was the least room for any such collection of the aforesaid naval cots as might seem to be called for by the number of officers and men on board. Space was so limited, having regard to the amount of armament carried, that there was very little spare accommodation available, and greater reliance had to be put on stretchers, which took up less room than cots. Nor could



CONVEYING WOUNDED IN NAVAL COT.

(Used alike on board Ship, Naval Ambulance Train and Road Ambulance.)

[*To face p.* 576.



THE NEIL ROBERTSON STRETCHER.

THE NEIL ROBERTSON STRETCHER IN USE.

[*To face p.* 577.

the cots be used on destroyers, with their narrow hatchways, while there were numerous occasions when the cot, with its patient, could not be lowered into the hold of the vessel acting as ambulance ship.

These last-mentioned conditions were often met by the use of what is known as the " Neil Robertson stretcher," the special purpose of which is to allow of wounded men being passed through narrow spaces where they cannot be carried. Made of canvas and bamboo, the stretcher is strapped round the body, head and legs of the patient in such a way that he is perfectly rigid, while the ropes connected with the stretcher from foot to head allow of stretcher and patient being raised or lowered through any space or aperture wide enough for the human body to pass.

While, again, the standard naval cot is so constructed that it may be not only suspended from hooks in the ambulance train but, also, attached to chains for lowering it on to another vessel alongside, there is the possibility that this procedure might distress a sick or wounded man when there was a considerable distance between the deck of a great battleship and that of (say) a small steamer, while any sudden shifting of the patient's position in the cot, causing the two sections of his canvas coverlet to come apart, would be not without an element of danger to himself. This risk it has been sought to meet by placing the cot on a wooden " tray " when it is lowered overboard, with the result that a greater degree of safety is assured.

In the types of vessels used for collecting the sick and wounded at sea, and bringing them either ashore or to the hospital ships in the ports, there was much variation. At Scapa Flow and Invergordon use was made of steam-drifters which were specially fitted up so that they could accommodate cot cases. These drifters made two regular collecting rounds each day, visiting one section of the Fleet in the morning and another section in the afternoon. Ships having patients awaiting removal would signal accordingly, and the drifters would then draw up alongside and take the cases on board, returning to shore either when they were loaded up or when there were no more patients left for the time being. In the Forth, in addition to drifters two shallow-draft paddle steamers were fitted as carriers under the supervision of the Medical Transport Officer for Scotland. Lifts provided easy loading to the lower decks of these vessels, the shallow draft and high speed of which rendered them handy and serviceable vessels, while each carried 90 cot cases and 100 sitting cases. Their use, together with that of lighters fitted with shelves on which cots could be placed, rendered it possible to clear ships after action in a very short period of time and allowed of those ships proceeding to sea again with all dispatch. At Plymouth there was a regular hospital-boat available.

Mention has already been made of the fact that the " loaded " naval cot could be carried either by hand or on the shoulders of its four bearers. The latter was the method more generally adopted. In cases where the patient was not obliged to keep to his cot yet had difficulty in walking,

in getting up the side of a ship, or in mounting a ladder when this was necessary, he might be carried on the back of another man by means of a canvas arrangement which ensured his safety, distributed his weight equally on the back of his bearer, and, at the same time, left the latter with full use of both hands.

The work of removing patients from ship to hospital or from ship to ambulance train was done at all large naval centres by bearer parties from the Royal Naval Auxiliary Sick Berth Reserve. Elsewhere it was undertaken by Voluntary Aid Detachments of the Order of St. John of Jerusalem or by members of the British Red Cross Society. In either case the bearers were men who had been specially trained in the handling and transport of naval cots.

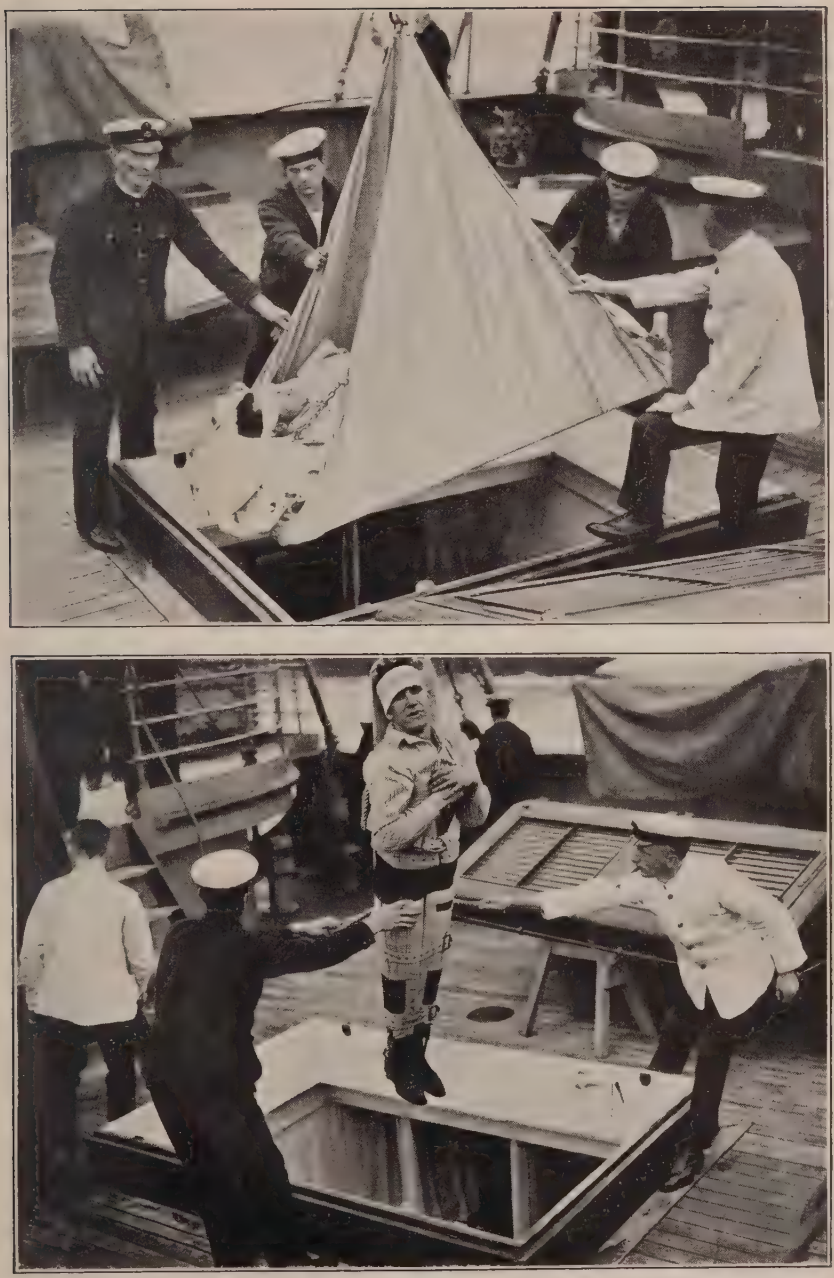
Similar arrangements were made at the various points of arrival of the trains.

In January, 1918, having regard to possible emergencies, it was decided to form a special Naval Medical Transport Corps as cot-bearers and for the performance of minor hospital duties on the North-East Coast of England. Membership of the Corps was limited to men belonging to the St. John Ambulance Brigade who were over age for military service or had been rejected as unfit. Eight Companies of fifty men each were formed, namely, double Companies (100 men each) at North and South Shields and at Hull, and single Companies at Newcastle, Eston, The Hartlepools and Sunderland.

For the removal of patients from the railway station at the end of the ambulance-train journey it was, of course, necessary to employ road-ambulance vehicles; and these had to be specially fitted in order to take the standard naval cot in which the sufferer was to remain until he reached the hospital that constituted his final destination.

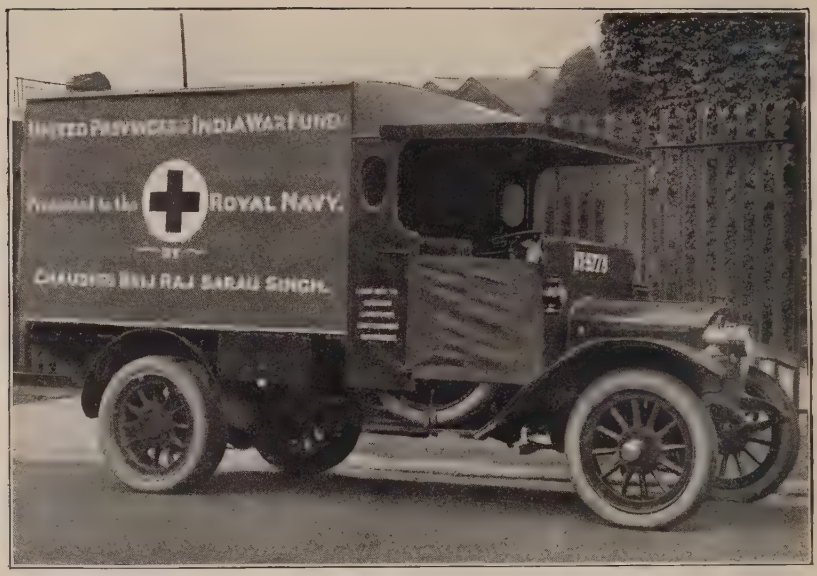
One of the first measures taken, accordingly, on the institution of the Naval Medical Transport Service, was to arrange for a supply of road ambulances; and, as an initial step in this direction, thirty motor-omnibuses were obtained from the London General Omnibus Company and provided with spring trestles on which the standard cots could rest. Not even the latest pattern of specially-built ambulance offered, it is said, a greater degree of comfort for the patient than these converted motor-omnibuses.

Then, also, in the earliest days of the war, twelve ambulances were lent by the Red Cross Society, while through this organisation came, later on, a most acceptable gift of 56 ambulances from the United Provinces of India War Fund. Three more were presented by the "Silver Thimble Fund" and eight were received from other sources. In this way the Naval Medical Transport Service had, on the cessation of hostilities, a total of 109 ambulances available in different districts.



NAVAL RAID ON OSTEND: WOUNDED FROM THE *VINDICTIVE* BEING LOWERED INTO HOLD OF HOSPITAL SHIP.

[*To face p.* 578.



One of Fifty-six Road Ambulances Presented by the United Provinces of India War Fund.

Removing Naval Cot Cases between Ambulance Train and Road Ambulance.

[*To face p.* 579.

Naval Sick and Wounded: Statistics.

Having regard to the fact that naval engagements during the course of the war were few in number as compared with the battles fought on land, it might be assumed that, except on certain occasions, there could not, after all, have been any very great demand for the ambulance trains provided in the interests of the Navy. The limited extent of the fighting at sea did not, however, materially affect the situation inasmuch as the proportion of sick carried was far in excess of that of the wounded, the former providing a steady stream of patients when there were none at all of the latter.

Here, again, it is necessary to consider the conditions which concern naval as distinct from military services in time of war.

Sick men are not wanted on fighting-ships at all. In practice, if any man got ill, or even indisposed, and was not likely to get well again within a very few days, he was sent ashore alike in his own interests—since he would be more likely to effect a speedy recovery there—and in those of the Navy itself. With the possibility of an action at any moment, it was undesirable to retain a sick man on board, not only because he was sick, and would require to be looked after, but because it was necessary that, even although he might be only temporarily invalided, his place should be taken at the earliest possible moment by a man in sound condition in order that the fighting strength of the vessel might not be impaired. So for every man taken ashore another was at once brought back.

This immediate provision of substitutes, not alone for the sick but even for the ailing, became an essential part of the whole scheme, and one, also, for which the most careful provision had to be made. It meant constant work for all branches of the Naval Medical Transport Service, and it meant, as well, that there was always much for the naval ambulance trains to do whether actions were being fought at sea or not. On the other hand the adoption of the policy in question led to the introduction into the Fleet of an equally constant flow of fresh life and vigour, and in the special circumstances of the situation this was also of great advantage.

There were, again, abnormal circumstances which led to the number of sick attaining abnormal proportions.

In the first place the enormous expansion of the Fleet must be borne in mind. What this expansion amounted to is shown by the following figures, giving the number of officers and men in the British Navy at the periods stated:—

Date.	Number.	Date.	Number.
June, 1913	141,084	June, 1916	332,078
June, 1914	146,142	June, 1917[1]	381,592
June, 1915	276,958	June, 1918[1]	398,139
		September, 1918	408,997

[1] Between June, 1917, and June, 1918, about 53,000 Royal Naval Air Service men were transferred to the Royal Air Force.

To these figures must be added the 80,700 officers and men of the American Navy who were associated with our own and whose sick were, by arrangement, also conveyed in the ambulance trains provided for the British Navy.

Then the conditions of life on the North Sea during war-time were such as to predispose to a good deal of sickness. The vessels were fully manned, and they might, for this reason, be regarded as somewhat overcrowded, while the cooping-up of officers and men in a confined space for four years; the darkness of the long winter nights; the effect of trying weather conditions; the monotony of the daily routine; the waiting for an enemy who showed himself on such very rare occasions—these and other trying experiences had the effect of imposing a real strain upon all concerned. Men were sent ashore in batches, whenever possible, for a little relaxation. Even the one long street at Invergordon was a pleasant change for a few hours. They also had their periods of leave; though it happened from time to time that a man who had been away on leave might return with measles or some other contagious disease which would lead to much trouble on board his ship.

The worst experience of all in respect to sickness was due to the epidemic of influenza rampant in the Grand Fleet during the spring and early summer of 1918. It started with a few sporadic cases on the "King Orry" at Scapa Flow early in April, assumed epidemic form by the 19th of the same month, and reached a climax on May 10th, when the number of fresh cases reported was 744. From that time the daily return steadily decreased in gravity, the figures being reduced to a negligible quantity by the end of May. Within this period the sum total of officers and men who had been attacked, out of a total of 90,000 then forming the Grand Fleet, was no fewer than 10,313. In such numbers, too, had the sufferers been sent ashore that before long they filled up every naval hospital in the country—including those taken over by the Americans, who are declared to have rendered "yeoman service" to the British in this emergency—while 500 more, for whom accommodation could not otherwise be provided, were sent to the military hospitals at Glasgow. The distribution of so large a number of patients became, in fact, a matter of great perplexity. Cases of influenza continued to occur during June, July and August, and in September the disease again assumed epidemic form, the number of patients who then had to be dealt with being 5,381.

These various considerations will help the reader to understand better than he might otherwise do the reasons why, although conditions were against the display of great activity on the part of the allied British and American Fleets as a Fighting Force, the working of the naval ambulance trains from the outset of the war until the end of 1918 showed the following considerable totals:—

OFFICERS:		
Cot cases	1,440	
Non-cot cases	2,936	
Total officers		4,376
MEN:		
Cot cases	25,708	
Non-cot cases	47,697	
Total men		73,405
TOTAL OFFICERS AND MEN		77,781
TOTAL COT CASES		27,148
TOTAL NON-COT CASES		50,633

These figures are, of course, independent of the patients who were brought direct to Plymouth, Portsmouth or Chatham by hospital ship and were removed to hospital without any need for conveyance by train.

JUTLAND AND ZEEBRUGGE.

The interval which elapsed between the time when naval men received their wounds and the time when they found themselves in a base hospital at home naturally varied according to circumstances. In the naval action off Heligoland on August 28th, 1914, British wounded were received at the Chatham Naval Hospital within twenty-four hours. Wounded from the Naval Brigade which took part in the defence of Antwerp were six or eight days before they reached the same destination. Conveyed first to the Antwerp hospitals, they were, on the approaching fall of that city (October 9th, 1914), removed successively to Ghent, Bruges and Ostend, where they finally embarked for England.

How the Naval Medical Transport Service, with its organisation of ambulance trains, worked in practice can, perhaps, best be illustrated by referring to what was done in regard to the Battle of Jutland and the operations at Zeebrugge.

The number of wounded in the Battle of Jutland, fought on Wednesday, May 31st, 1916, was 674. They were mostly taken to Invergordon, Port Edgar or Rosyth, and were there either transferred to the hospital ships or removed direct to hospitals on shore. Nearly all were severe cases, the patients being badly burned. Owing to the unsuitability of hospital ships for prolonged treatment those received on them were sent ashore as soon as possible, mainly to the ambulance trains waiting to convey them elsewhere. In this way the vessels were invariably cleared within two days.

At Invergordon a naval ambulance train with wounded from the Jutland Battle was dispatched at 9.24 p.m. on Saturday, June 3rd. Another followed at 8.12 p.m. next day. All the patients conveyed on the two trains came direct from the hospital ships. These were brought close to the harbour and the patients were taken from pier to railway station in ambulance cars.

The hospital ships certainly rendered good service on this occasion; but the range of their usefulness was limited by conditions which could not be controlled, while the ambulance trains were able to ensure a speedy avoidance of any congestion of wounded at the ports where they had been landed.

The operations of Zeebrugge on April 23rd, 1918, took place in the early hours of the morning. It had been arranged that the wounded should be landed at Dover, and No. 3 naval ambulance train, then at Chatham, was sent to Dover in order to convey them to the Chatham Naval Hospital. On the arrival at the quay of H.M.S. *Vindictive* the entraining of cases brought by that vessel began at 9.50 a.m. It was completed at 11.15 a.m., by which time all the wounded on board had been removed. The number taken on to Chatham was 150, this being exclusive of two serious cases sent to the military hospital at Dover and some slightly-wounded cases sent to Deal. During the loading and also during the journey all the cases put on the train were examined and received such immediate attention as was necessary. The train reached Chatham at 1.38 p.m., and the patients were at once removed to the hospital.

More wounded were brought to Dover in the afternoon of the same day, and they, also, found a naval ambulance train waiting for them. No. 5 train had left Edinburgh the previous night for Dover, where it arrived at 12.30 p.m. on the 23rd, just as H.M.S. *Daffodil* came alongside the jetty with one cot and three sitting cases. Two other cases were landed by the *Arrogant*. At 2.45 p.m. the *Iris* arrived with eighty-four, and all of these were entrained by 4.25 p.m., when the train started for Chatham. One of the ninety patients, who was suffering from shrapnel wounds in the throat, died in the train just before it left Dover. Chatham was reached by 5.42 p.m., so that, allowing for the patient who did not survive the journey, 220 officers and seamen, wounded in an engagement off the coast of Belgium in the early hours of the morning, were all brought across the Channel, landed at Dover, taken on by naval ambulance train to Chatham, and received in hospital there by the evening of the same day.

This probably unique event in the history of naval warfare may be regarded as typical of the complete success with which, notwithstanding the state of unpreparedness at the outset of the war, the elaborate organisation brought into being by the Admiralty under the conditions here narrated was carried into effect.